

THE IRON AGE

A Review of the Hardware, Iron and Metal Trades.

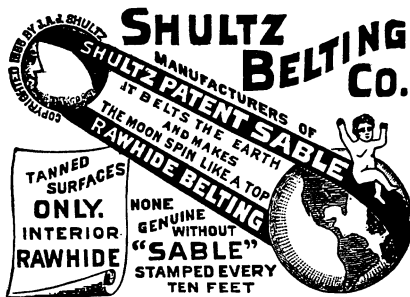
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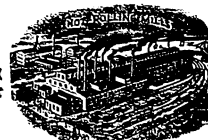
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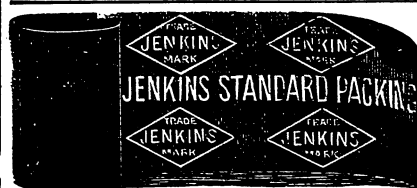
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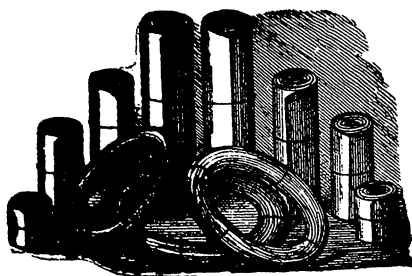
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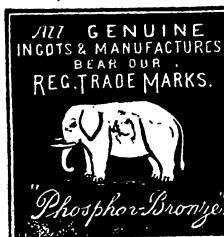
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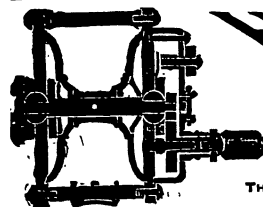
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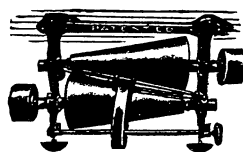
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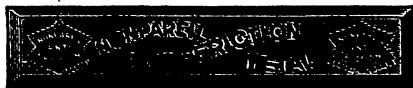
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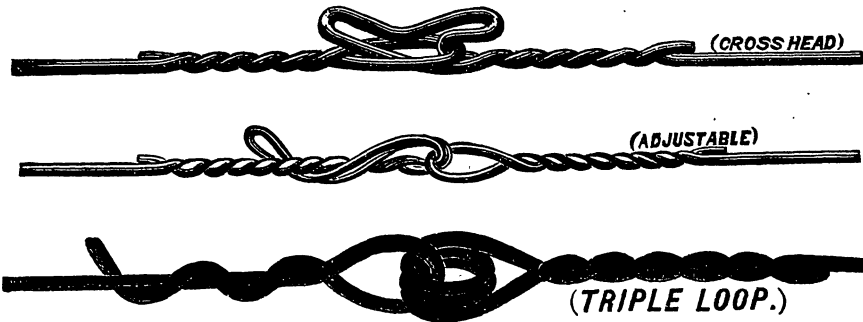
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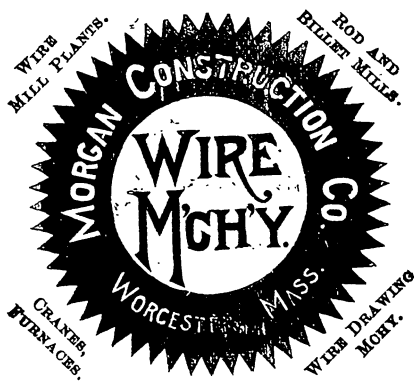
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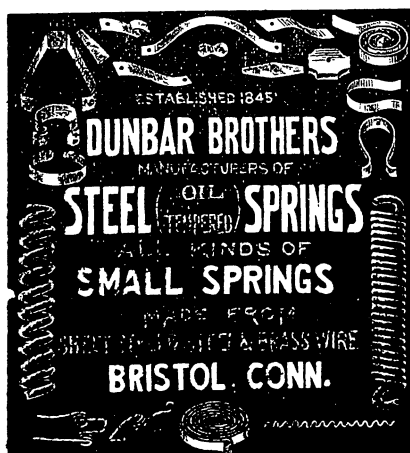
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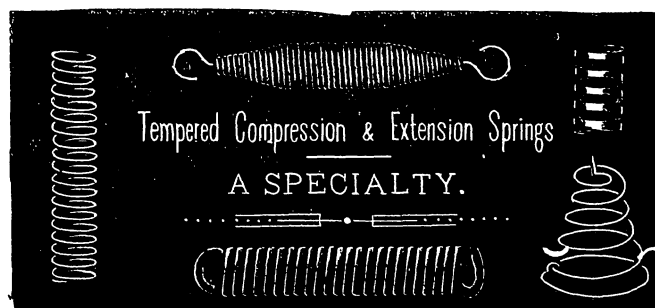
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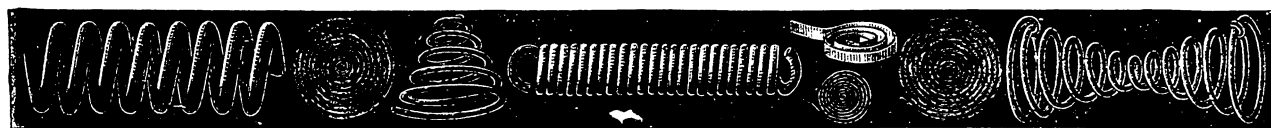
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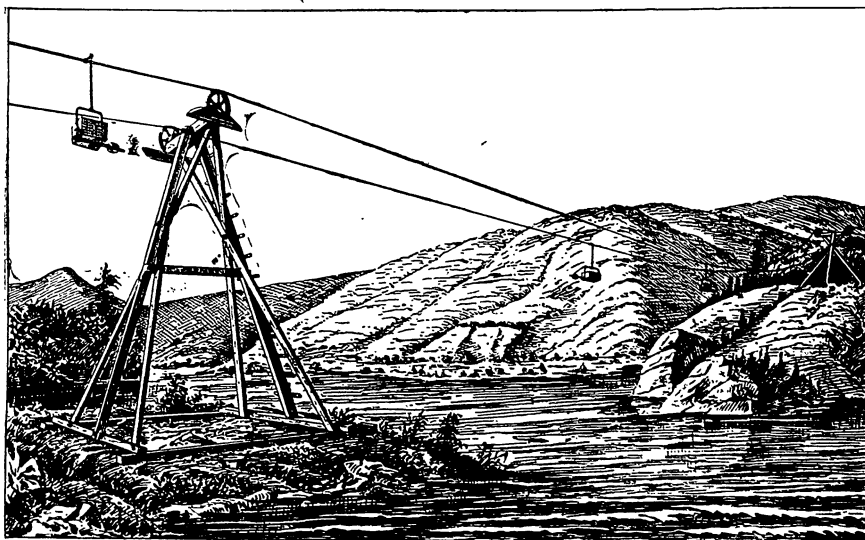
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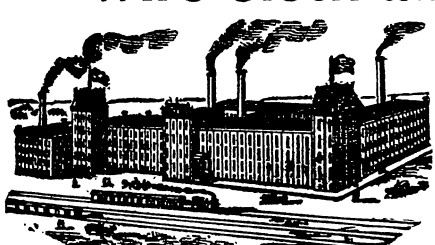
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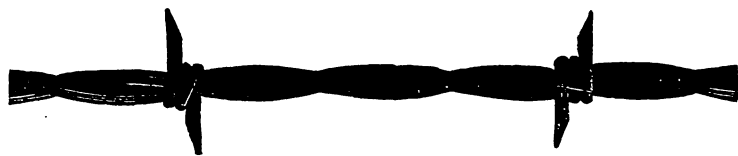
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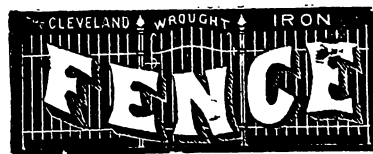


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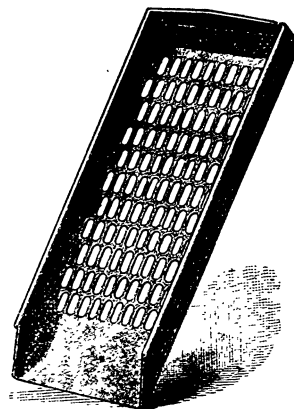
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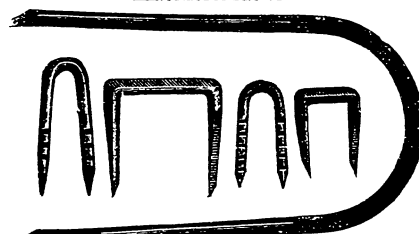
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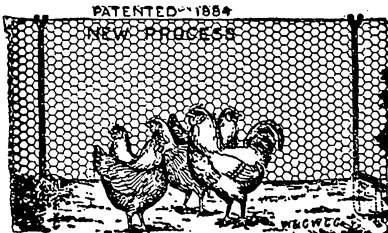
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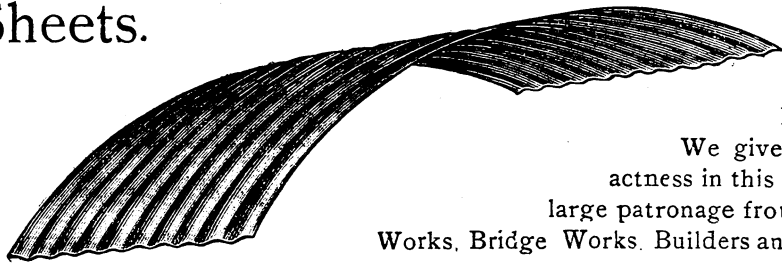
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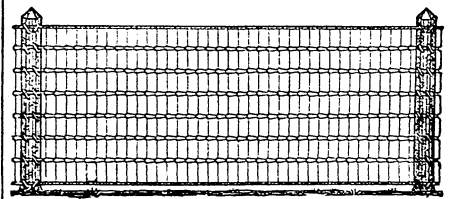
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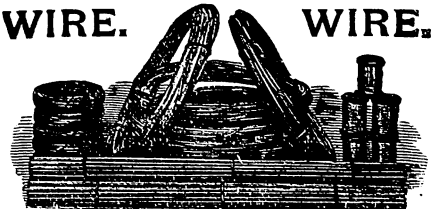
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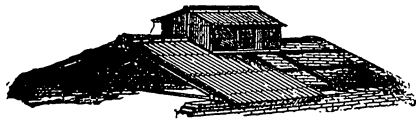
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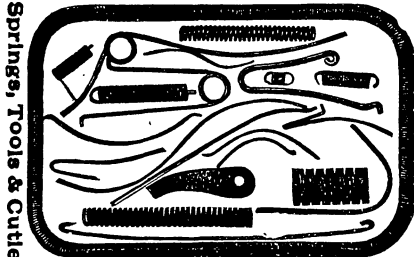
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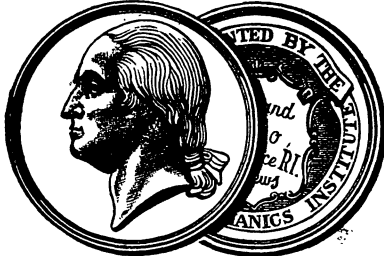
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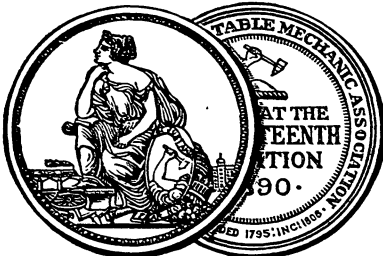
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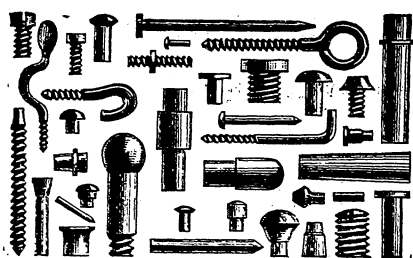
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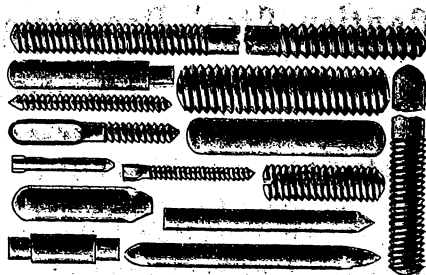
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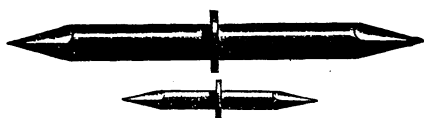


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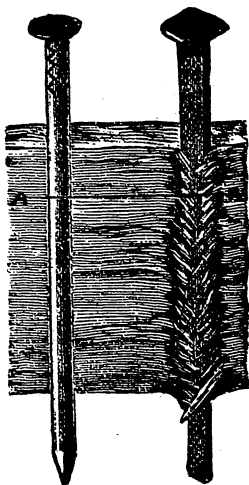
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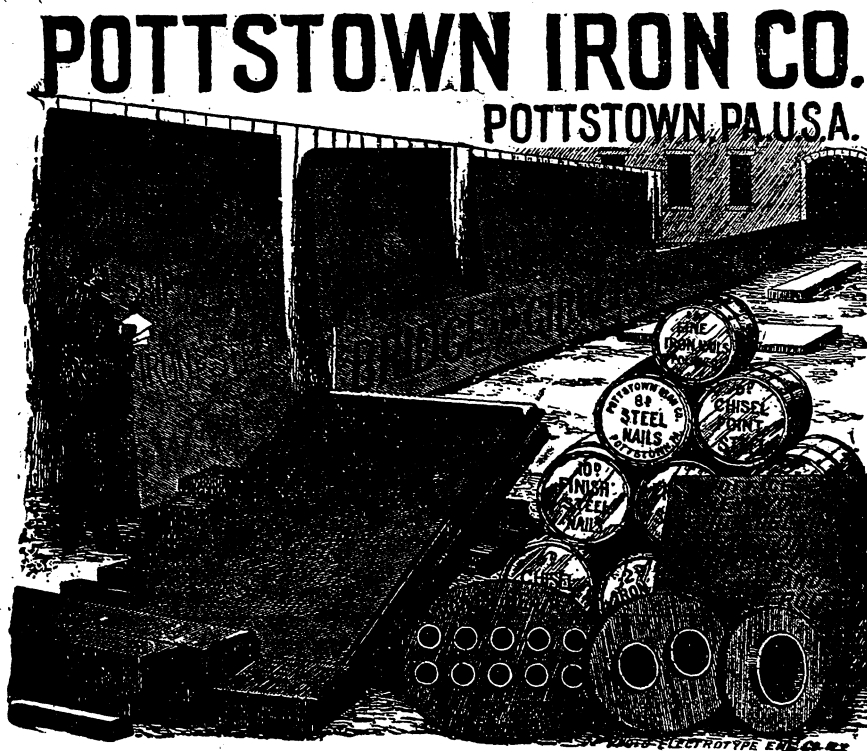
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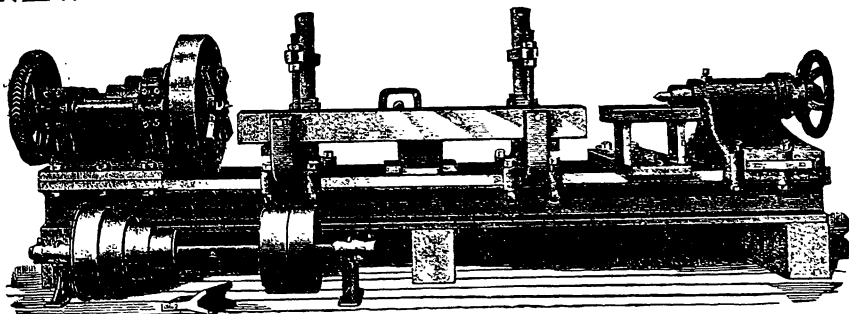
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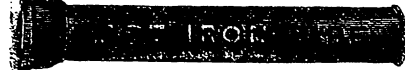
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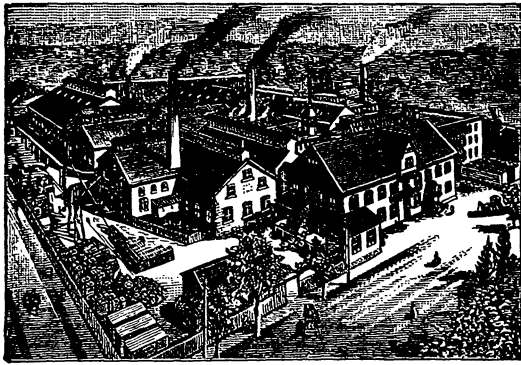
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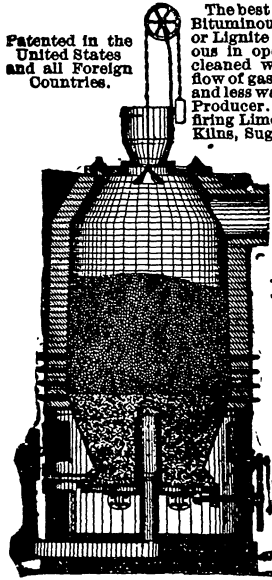
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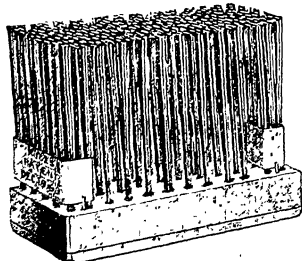
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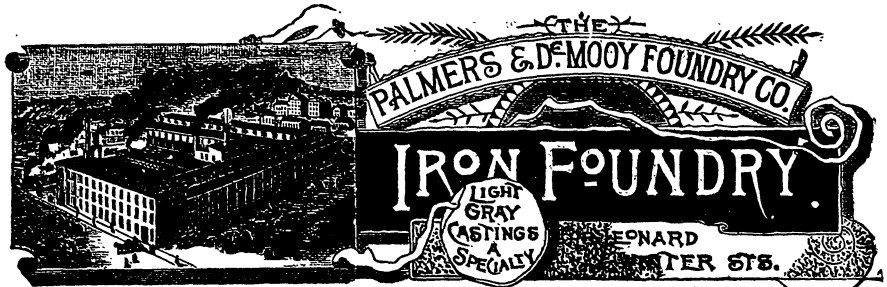
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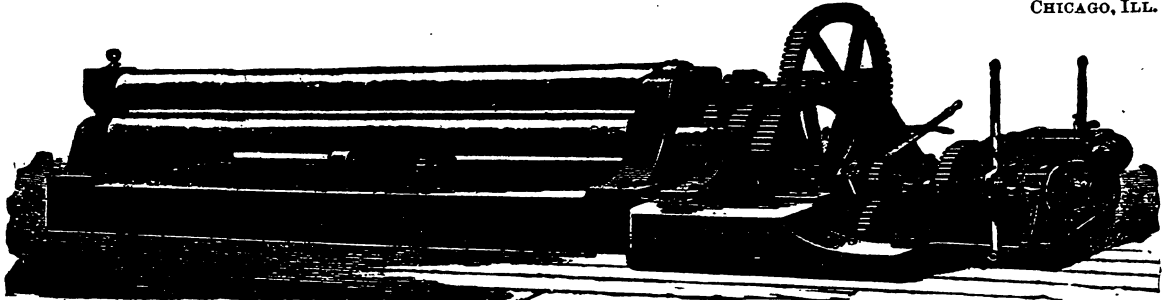
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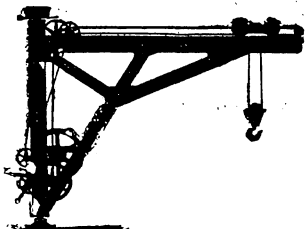
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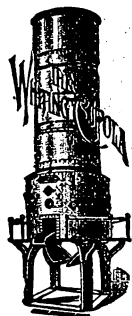
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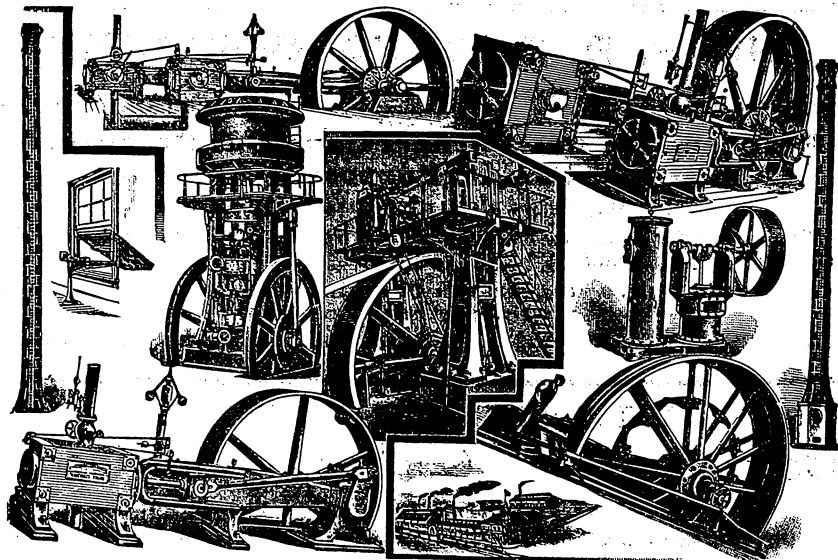
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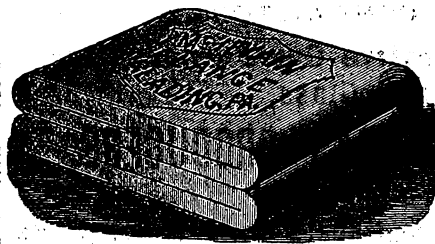
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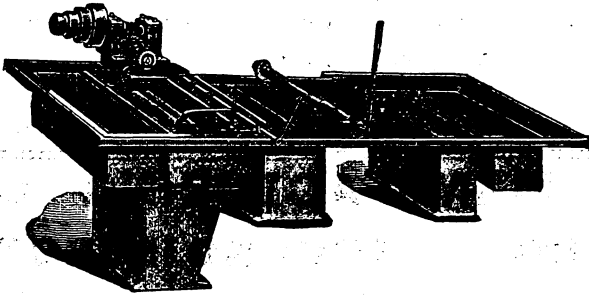
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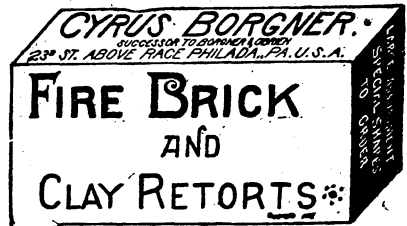


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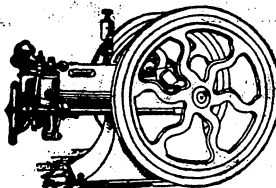
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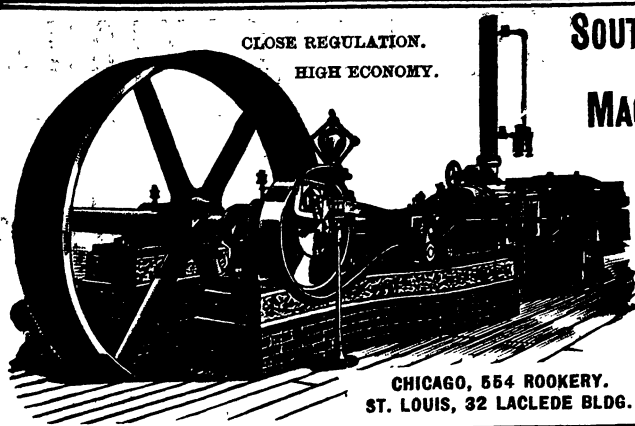
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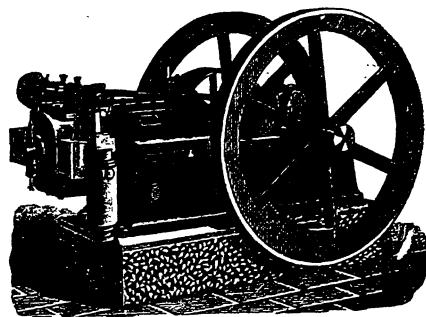
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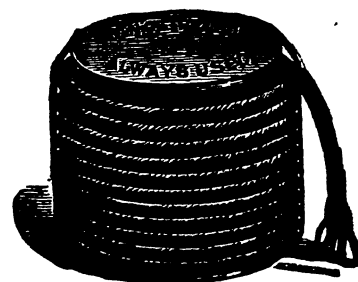
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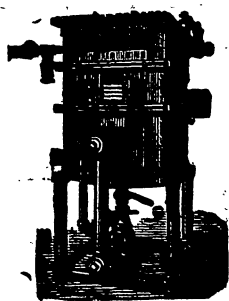
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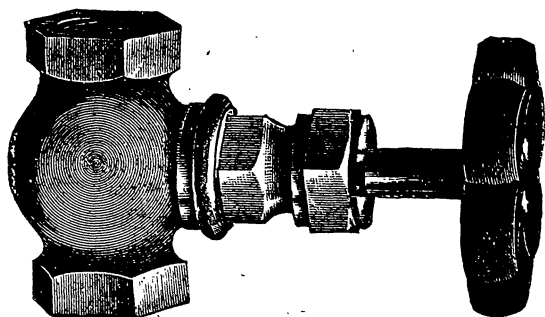


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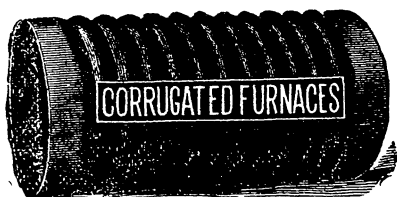
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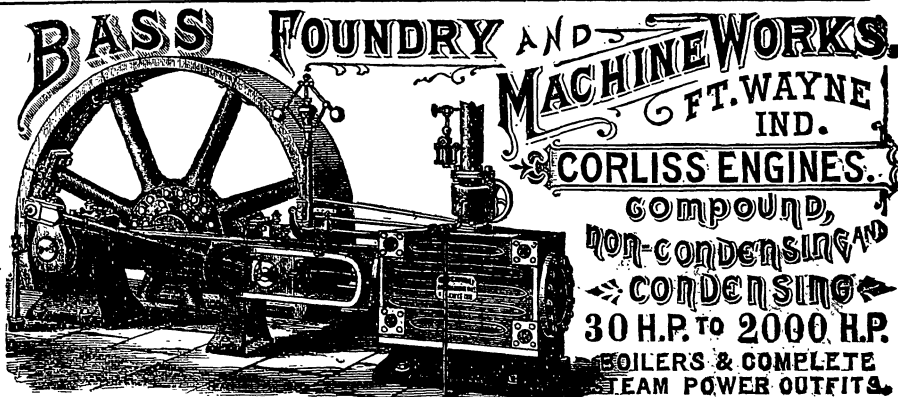
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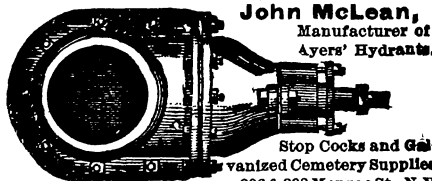
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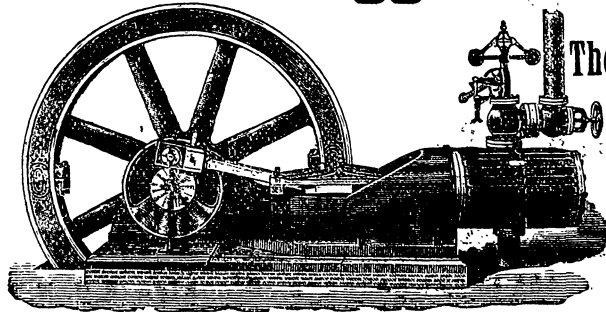
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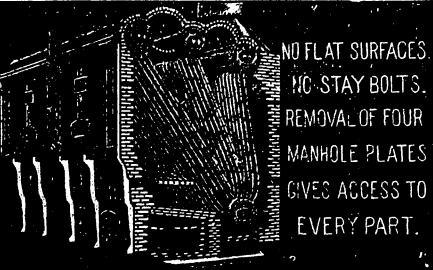
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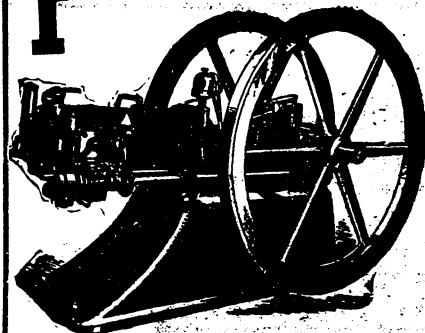
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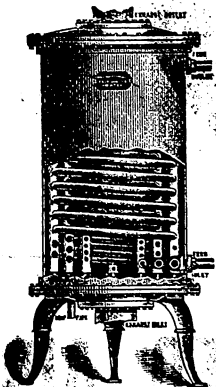


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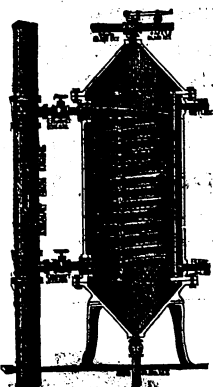
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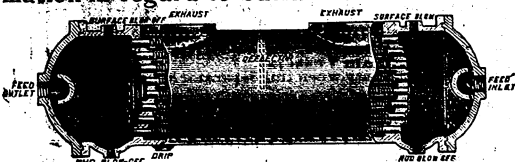
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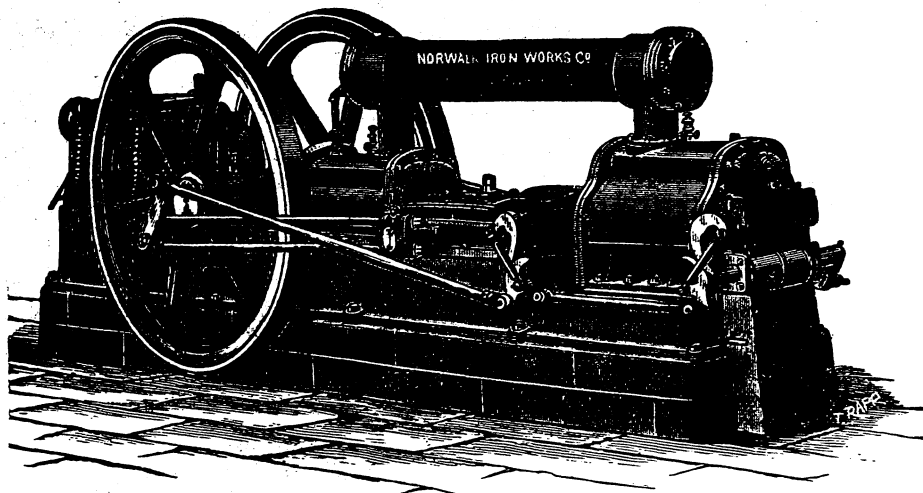


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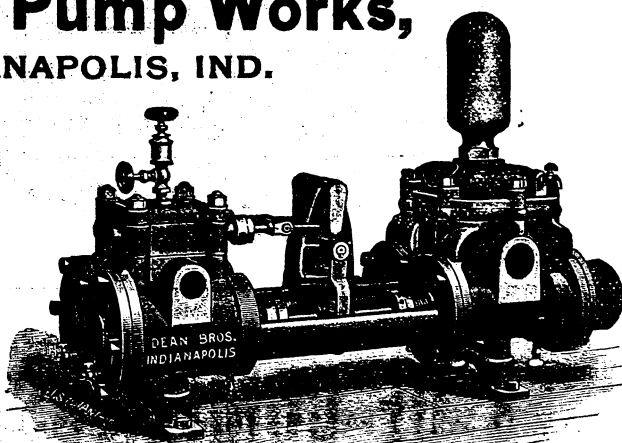
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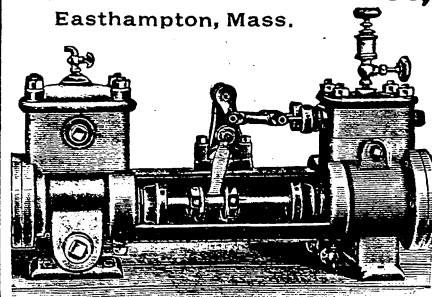
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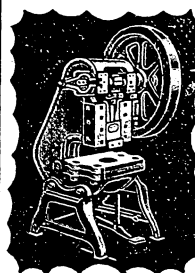
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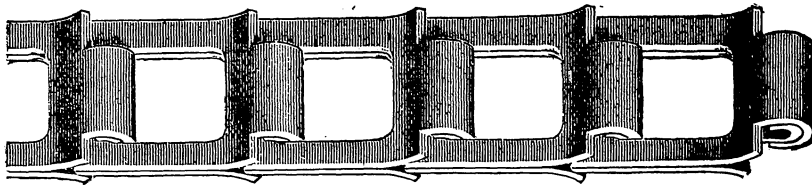
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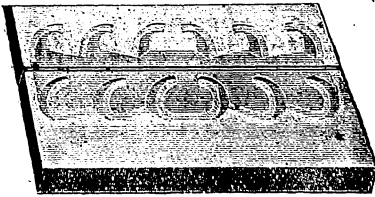


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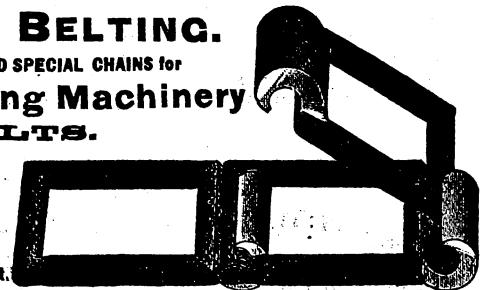
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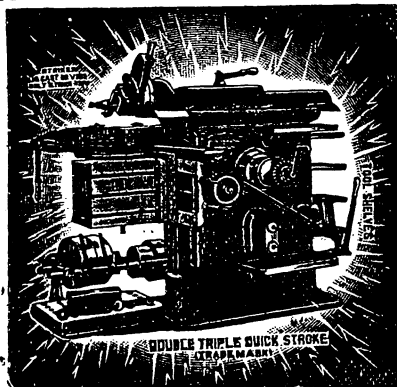


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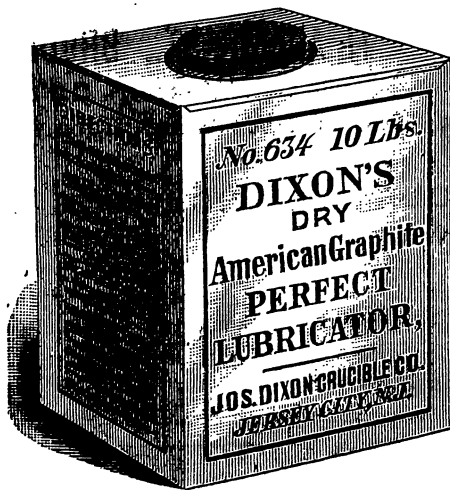
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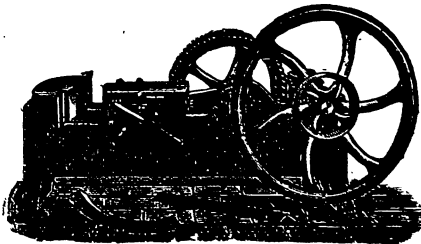
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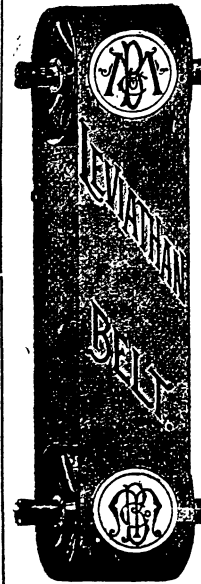
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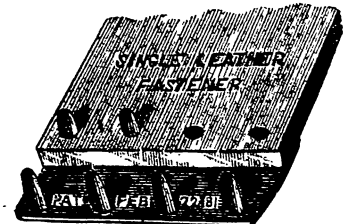
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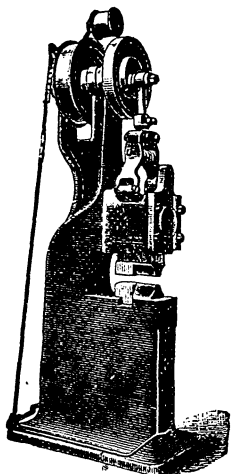
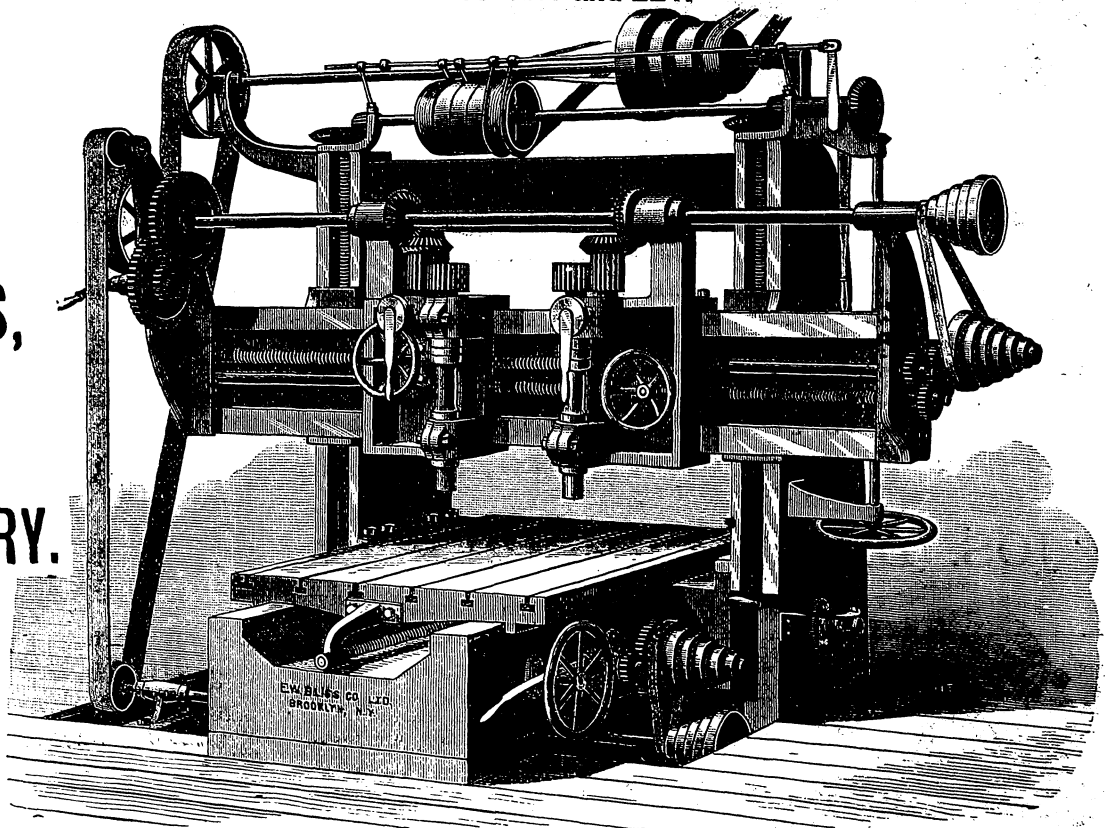
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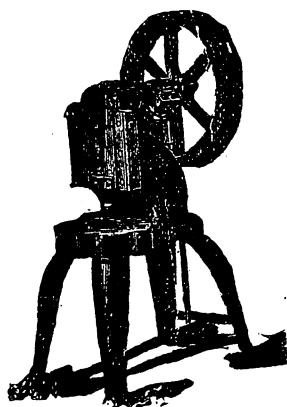
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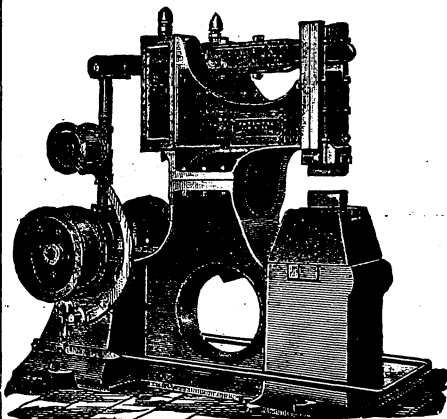
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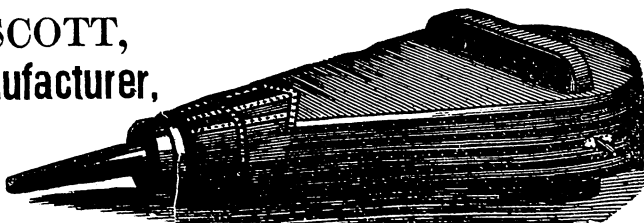
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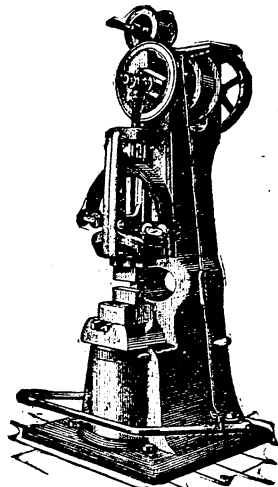
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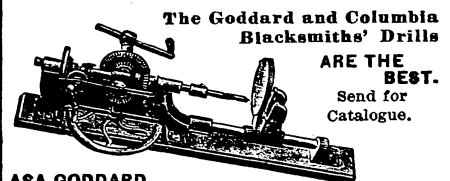
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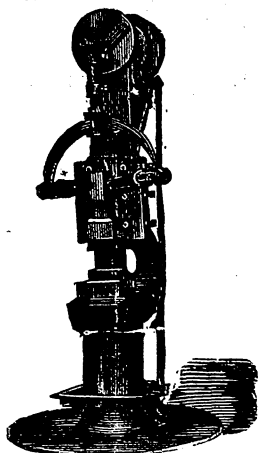
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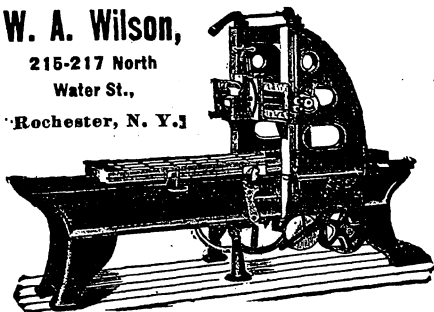
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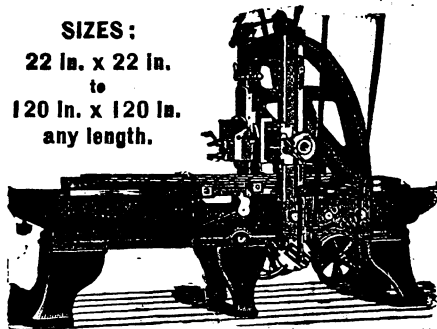


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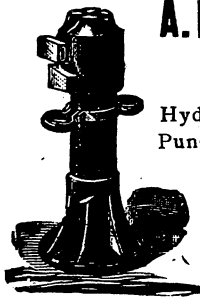
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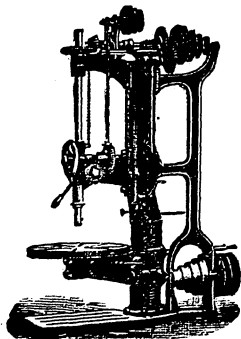


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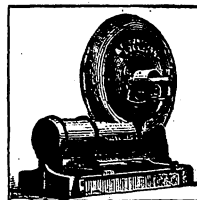
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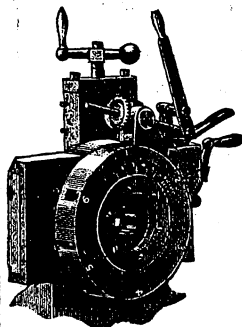
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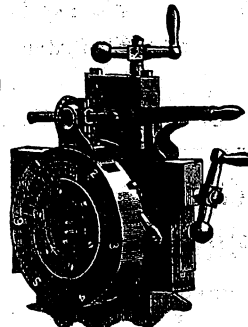
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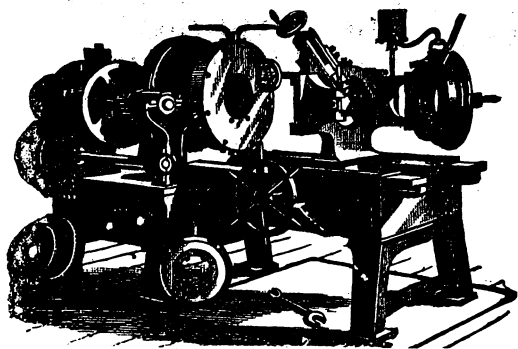
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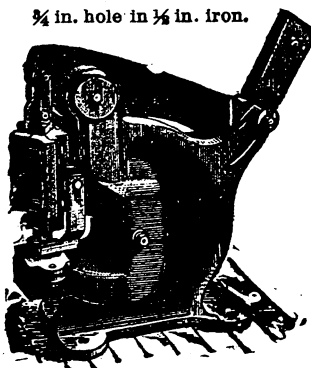
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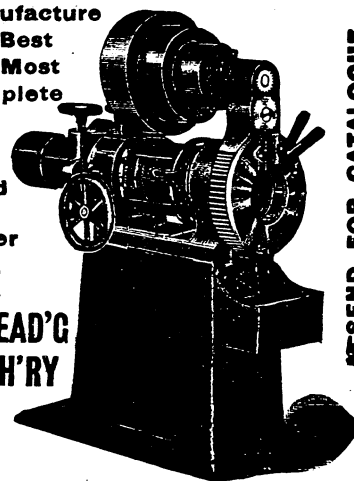


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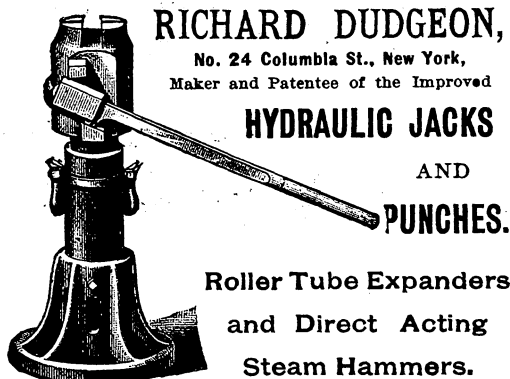
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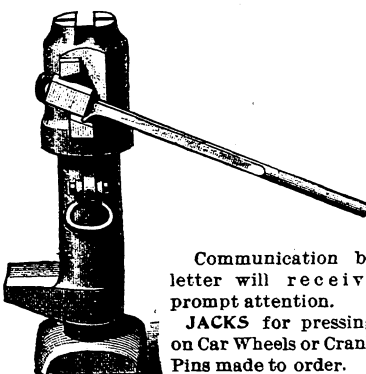
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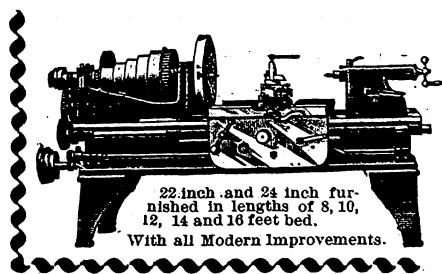


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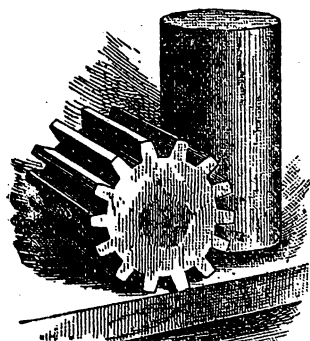
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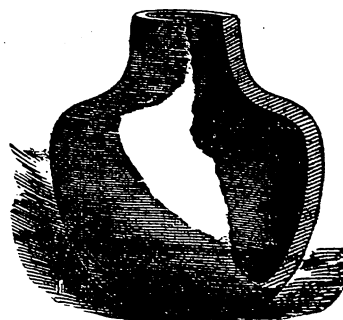
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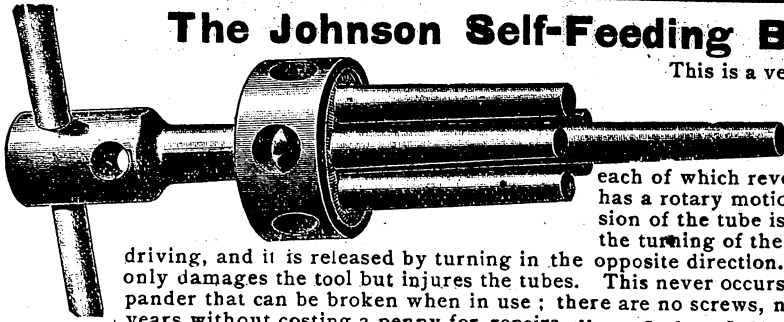
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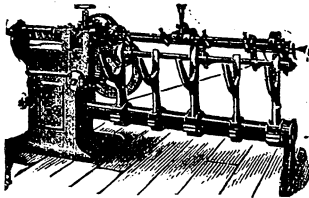


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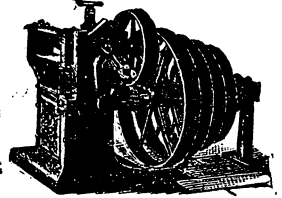
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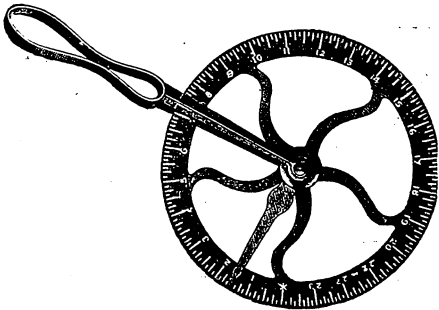
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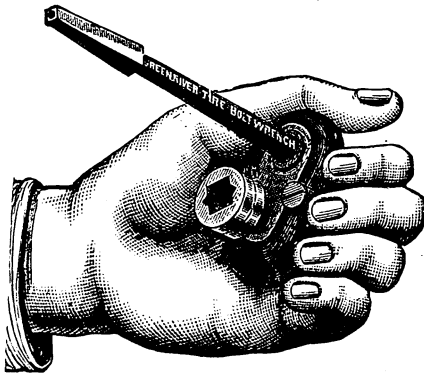
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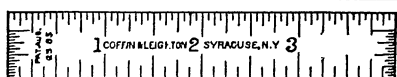
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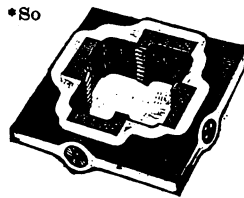
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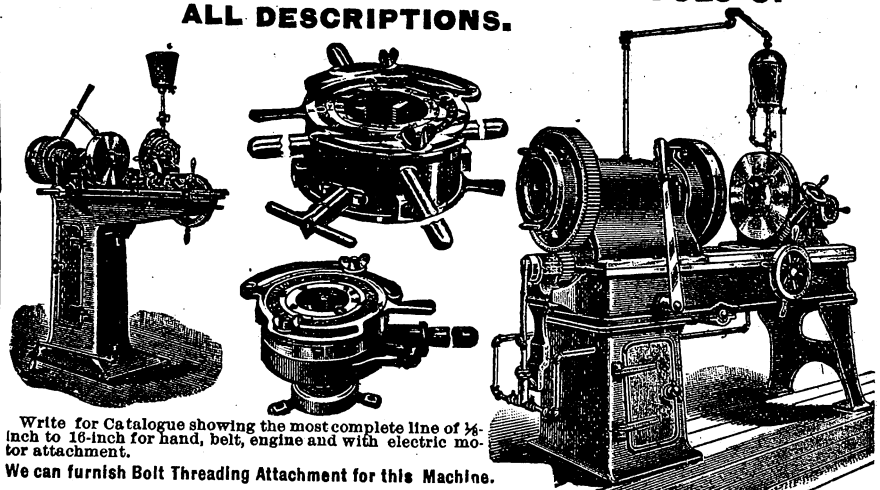
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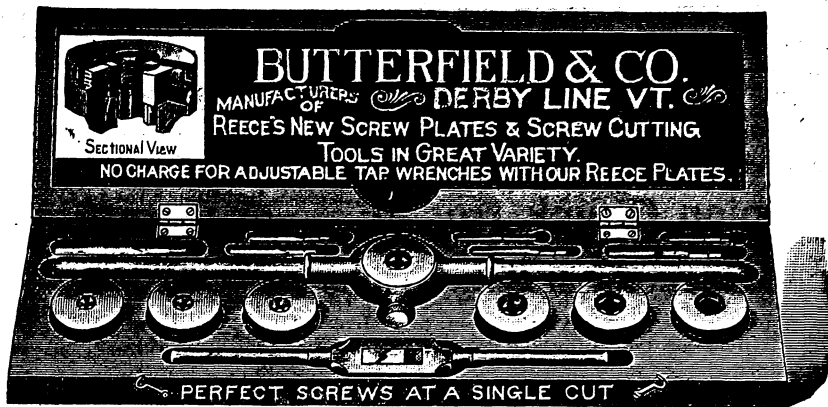
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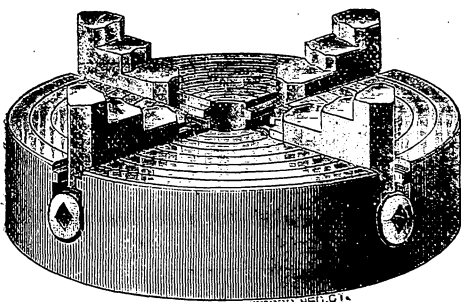
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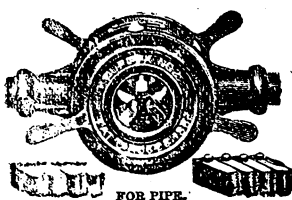
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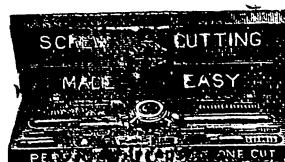


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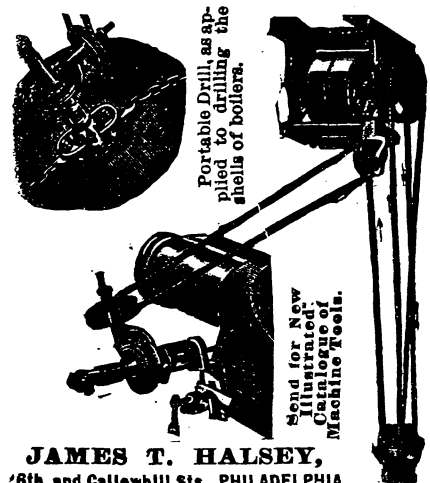
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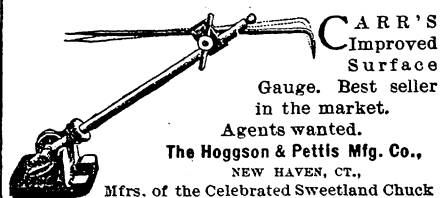
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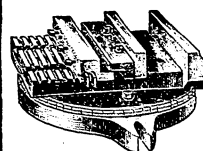


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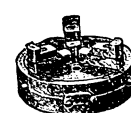


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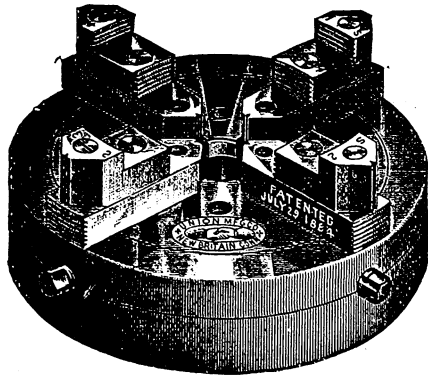


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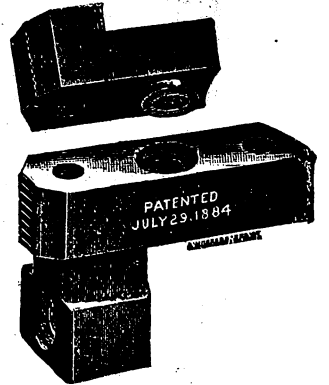
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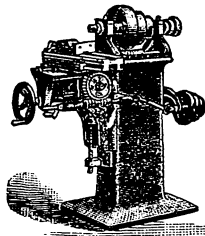
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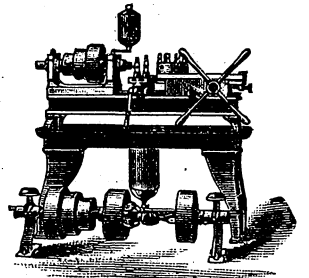
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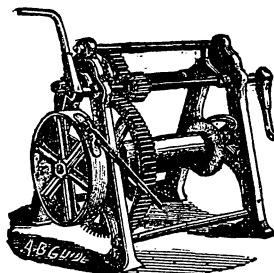
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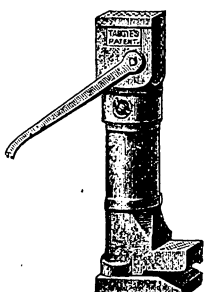
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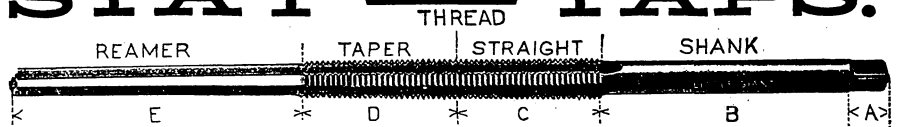
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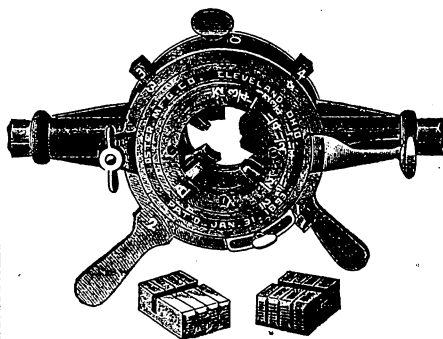
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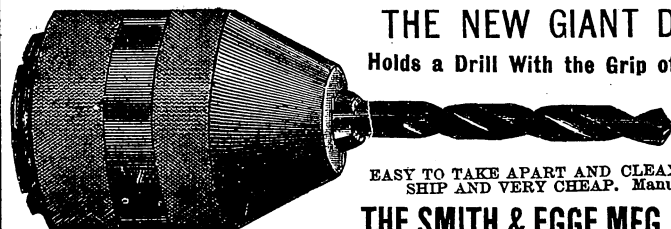
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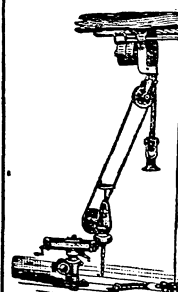
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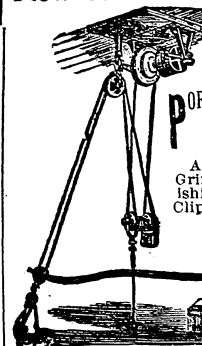
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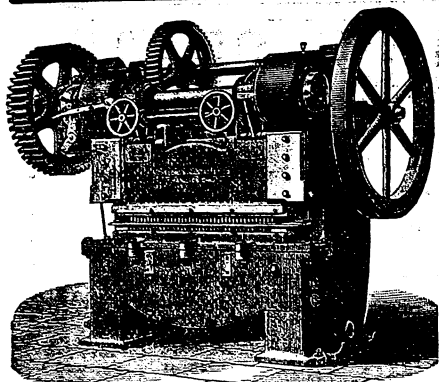
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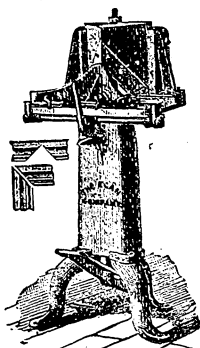


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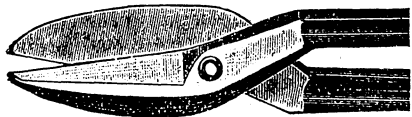
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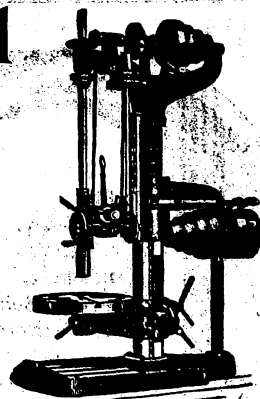
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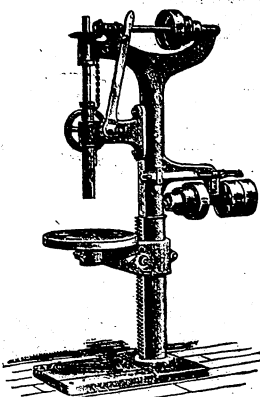


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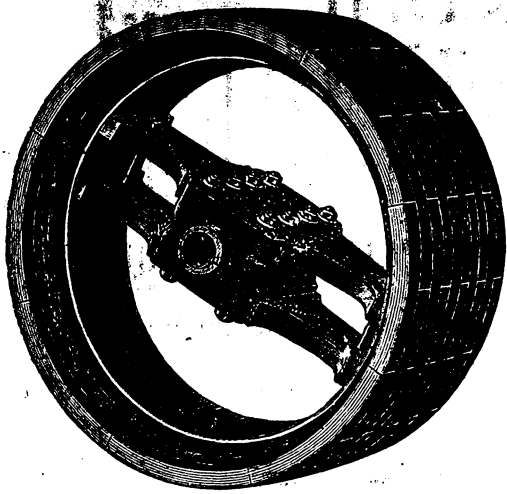
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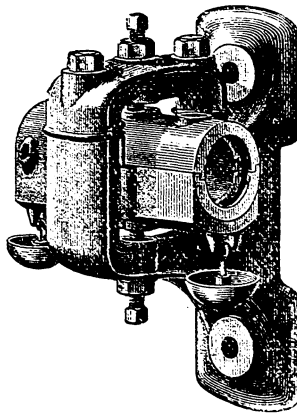
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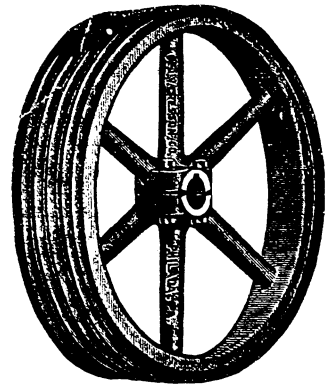
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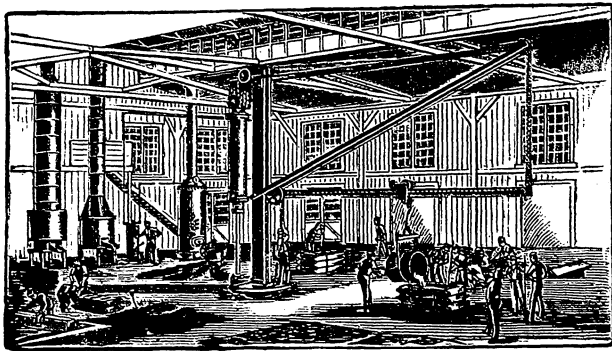
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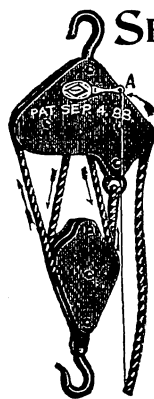
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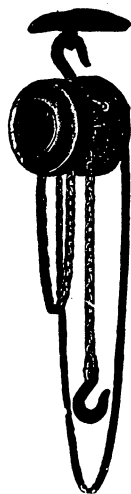
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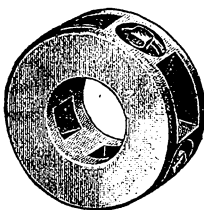
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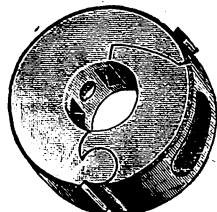


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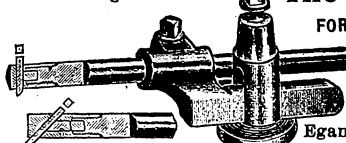
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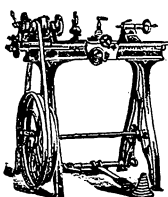
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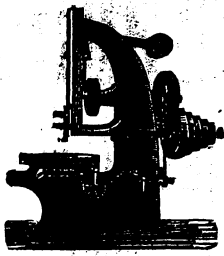


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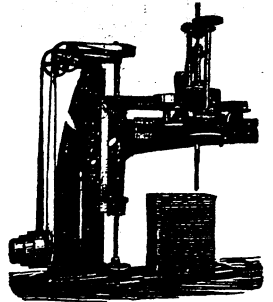
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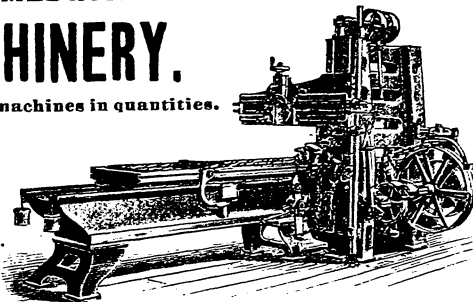
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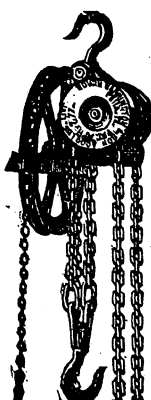
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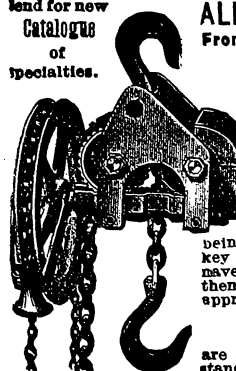
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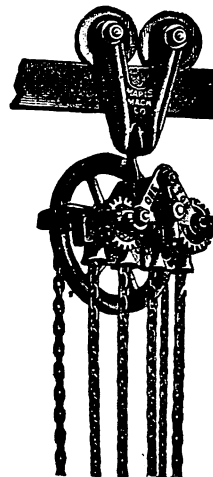
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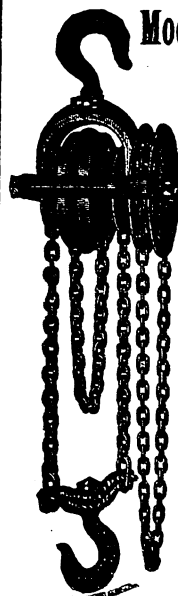


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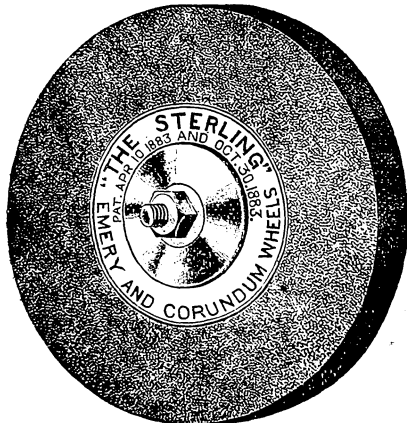
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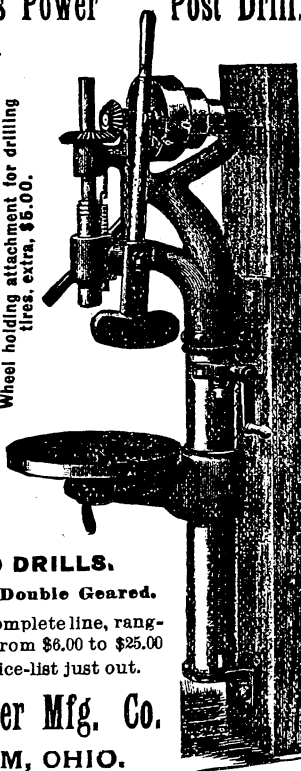
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FIG. 727.

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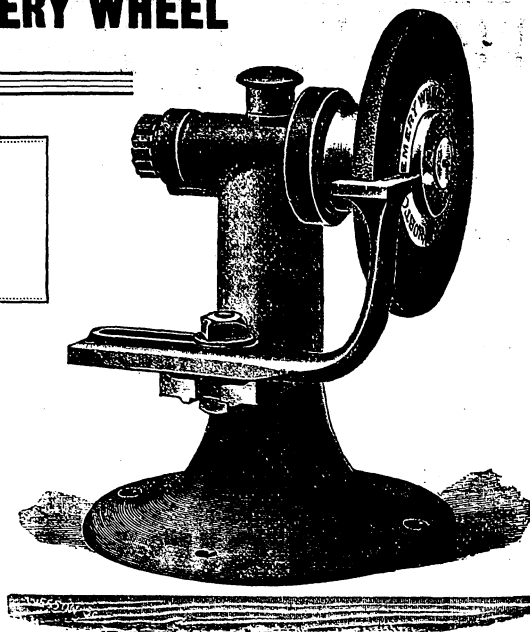
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Will carry Wheels 10 in. diam. x 1 in. thick.

Taper Spindle with easy "Take Up."

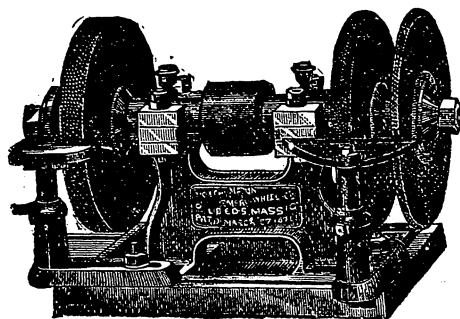
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Simple Rest, adjustable in two directions.



Waste-oil carried away in centre of column.

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Embracing full explanations of Fundamental Principles; proper Disposition of Pulleys; Rules for determining widths of leather and vulcanized rubber belts, and belts running over covered pulleys; Strength and Proportions of Pulleys, Drums, &c. Together with the principles and necessary rules for Rope Gearing and transmission of power by means of Metallic Cables. By J. Howard Cromwell, Ph. B., author of a Treatise on Toothed Gearing. 12mo, cloth. \$1.50.

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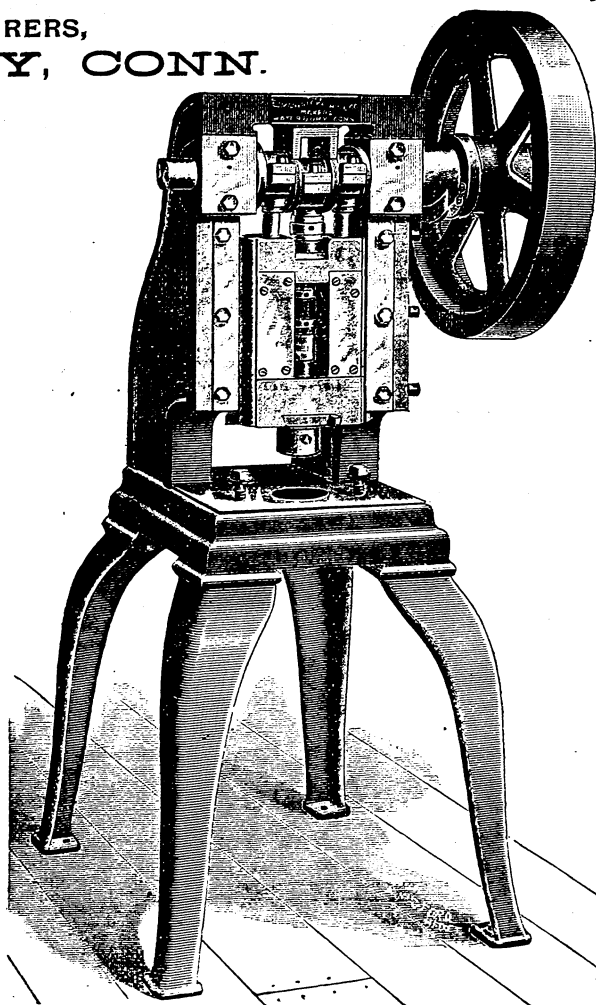
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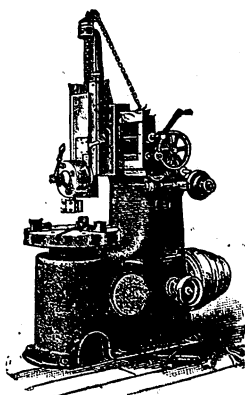


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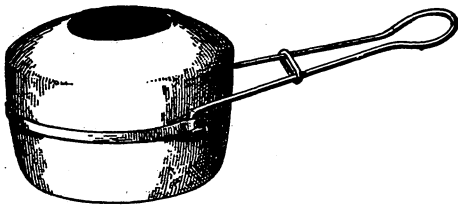


Fig. 108.—Clamp for Holding Tea-Kettle while Being Tinned.

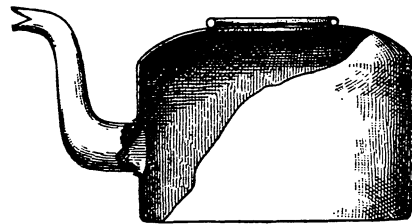


Fig. 110.—Tea-Kettle, Showing Spout Attached.



Fig. 107.—Planishing Tea-Kettle Side.

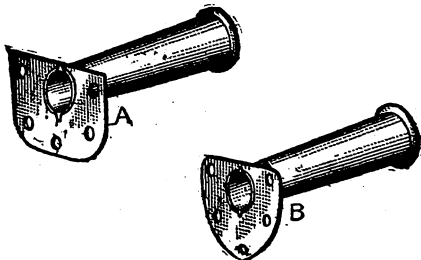


Fig. 54.—Way to Put the Flaps On.

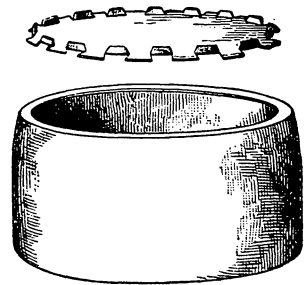


Fig. 105.—Putting in Bottom.

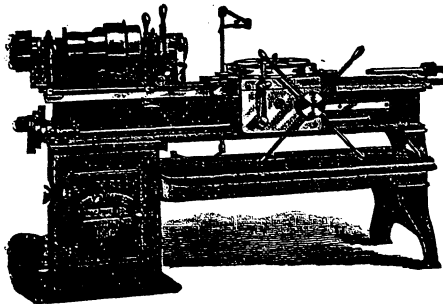
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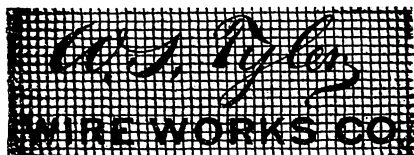
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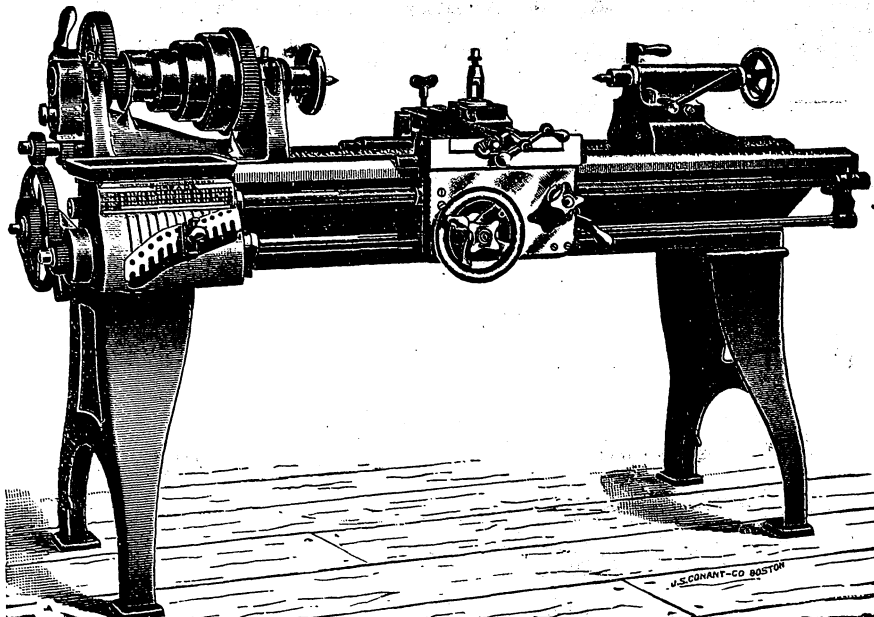
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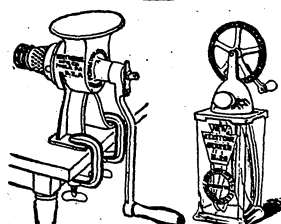
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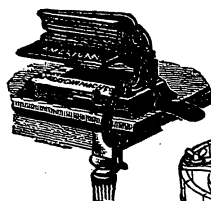
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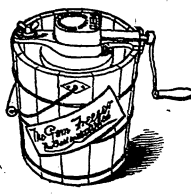


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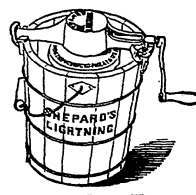


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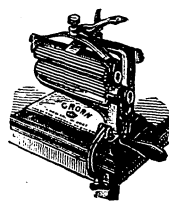
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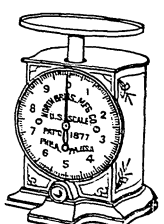


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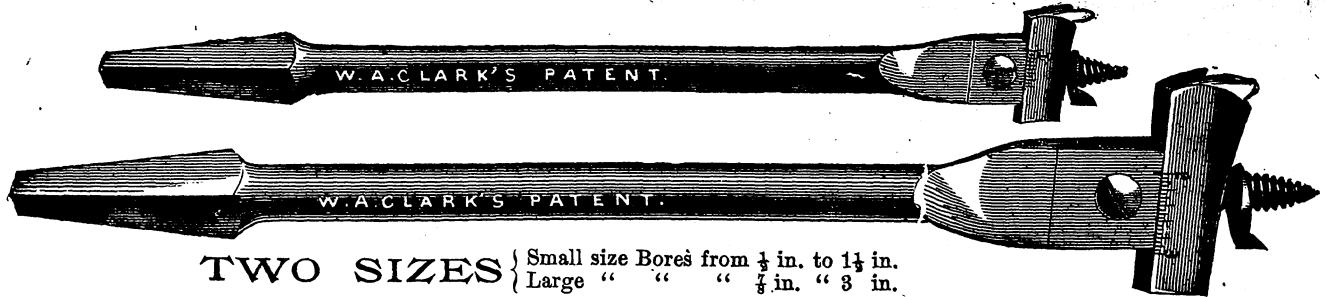


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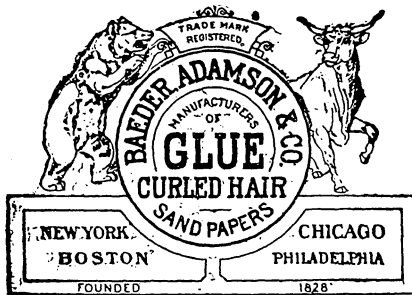
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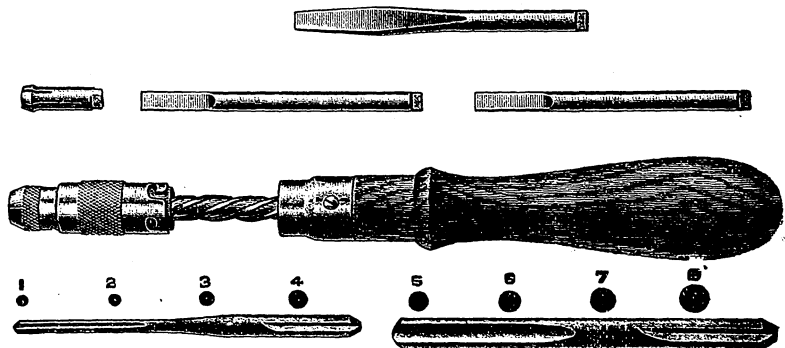
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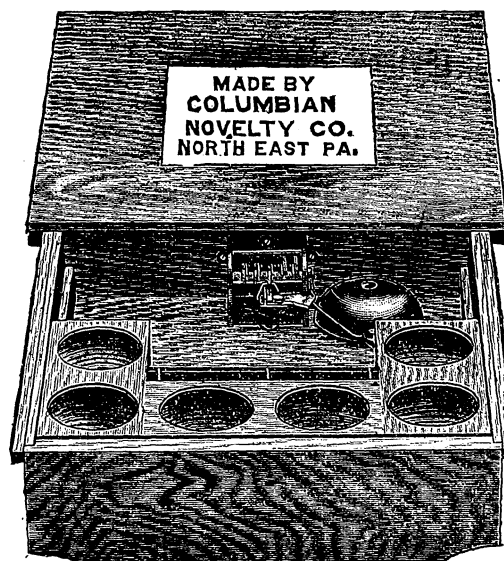
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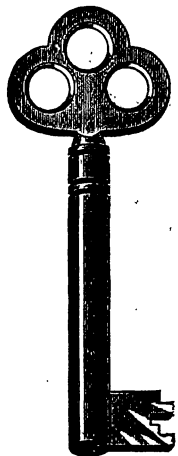
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Don't let your customers go to another store for what they want, but **SELL THEM WHAT THEY ASK FOR.**

We can furnish original and attractive advertising matter for "**LE PAGE'S GLUE**" upon request.

SEND FOR CIRCULARS AND PRICE-LIST.

RUSSIA CEMENT CO., Gloucester, Mass.

NEW YORK OFFICE, 95 Reade and 113 Chambers Streets.

PACIFIC COAST OFFICE, 23 Davis St., San Francisco, Cal.

IT COSTS ONE CENT

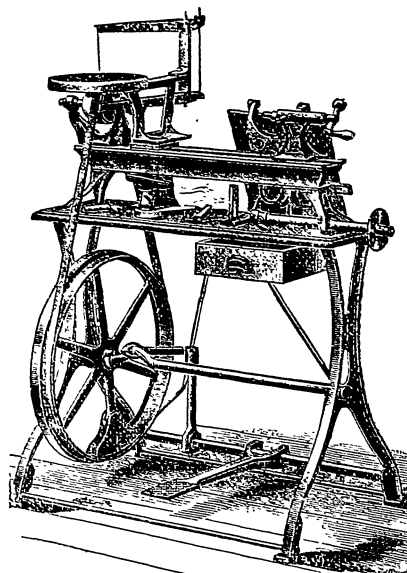
To send a postal card asking for full particulars.

THE IMPROVED

BABBITT COMBINATION FOOT LATHE,

WITH HOLLOW SPINDLE,

SELLS WORKS WELL.



The Jig Saw Attachment will saw hard wood 1 1/4 inches in thickness, and swings 15 inches between the blade and standard. The Circular Saw Attachment has iron table; planed true; perfectly adjustable; grooved at right angles (making guide and slide move true with the saw). Write for a descriptive circular giving all particulars and price of lathe and attachments.

A. J. Wilkinson & Co.,

182 Washington St., - Boston, Mass.

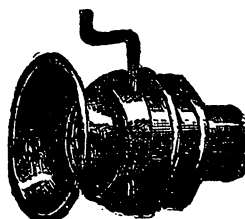
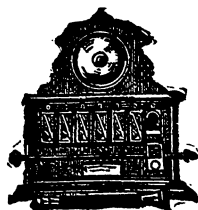
W. R. OSTRANDER & CO.,

204 FULTON STREET, NEW YORK,

Manufacturers of

SPEAKING TUBES, WHISTLES, ORAL, ELECTRIC MECHANICAL AND PNEUMATIC ANNUNCIATORS AND BELLS.

Complete outfits of Speaking Tubes, Whistles, Electric, Mechanical and Pneumatic Bells. A full line always in stock. Send for new catalogue. Factory, DeKalb ave. near Knickerbocker, Brooklyn, N. Y.



W. & B. DOUGLAS, MIDDLETOWN, CONN.

Branch Warehouses: 85 and 87 John St., New York; 197 Lake Street, Chicago, Ill.

THE OLDEST AND MOST EXTENSIVE MANUFACTURERS OF

Pumps, Hydraulic Rams, Garden Engines,

Yard Hydrants, Street Washers, Galvanized Pump Chain, Wind Mill Pumps and other Hydraulic Machines in the World.

DOUGLAS' DIAPHRAGM PUMPS, "Loud Patent."

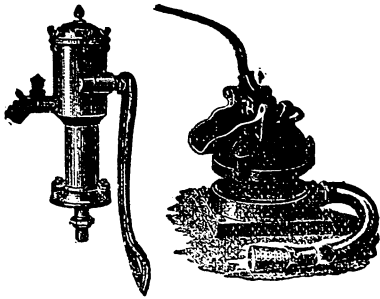
A LARGE CAPACITY AND EASY WORKING PUMP FOR

Water Works, Sewer Contractors, Foundation Builders, Mines, Quarries;

Fig. 209.

Fig. 881.

Fig. 145.



or wherever it is desired to raise a large quantity of water by
hand power.

The pump has large valves (accessible by hand), and will pump water containing sand, gravel, sewage matter, &c., without choking or any perceptible wear.

CAPACITY

from 3,000 to 4,500 gallons per hour.

These pumps are simple, durable and low priced.
Made either as shown in cut for Hose or for IRON Pipe Suction underneath.

Send for Circular and Price List.



C. I. Grindstone Frame.

THE DEMING
FACTORY
SALEM, O. U. S. A.
MANUFACTURERS OF
HAND & POWER PUMPS, WELL SUPPLIES & C. VERTICAL STEAM PUMPING ENGINES.
N. Y. OFFICE: 72 JOHN ST.
HENION & HUBBELL
GEN'L. WESTERN AGTS:
55 & 57 N. CLINTON ST.
CHICAGO, ILL.

F. E. MYERS & BRO.

THE LARGEST PUMP WORKS EXCLUSIVELY UNITED STATES
ASHLAND, O.
+ CATALOGUES FREE +

Ashland Pump and Hay Tool Works.

The New York Safety Dumb Waiter.
The Manhattan Dumb Waiter.
The Improved Humphrey Hand Elevator.
Made specially to be sold by Hardware Stores.
Thousands in use. Catalogues on application.
THE STORM MANUFACTURING CO.
NEWARK, NEW JERSEY.
Formerly at Poughkeepsie, New York.

Don't make Mistakes

USE LADD'S DISCOUNT BOOK

ACCURATE, RAPID, PRACTICAL.

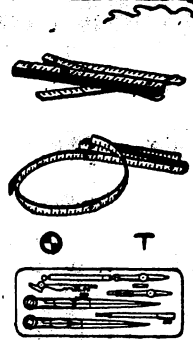
IT WILL SAVE YOU
TIME, MONEY and PATIENCE.

Regular, \$3.00.

Double Indexed, \$4.00.

Sent, Postpaid, upon Receipt of Price.

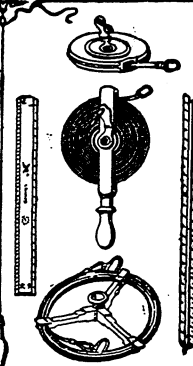
DAVID WILLIAMS, PUBLISHER AND BOOKSELLER,
96-102 Reade Street, New York.



KEUFFEL & ESSER CO. *NEW YORK.*
BRANCH: CHICAGO.
FACTORIES: HOBOKEN, N.J.

MANUFACTURERS OF EXCELSIOR MEASURING TAPES.
SUPERIOR QUALITY, LATEST IMPROVED. GREATEST VARIETY.
STEEL • METALLIC • LINEN • POCKET TAPES.
EXCELSIOR BAND CHAINS FOR SURVEYORS, LAND CHAINS, &c.
K & E CO FOLDING POCKET RULES.
NO WARPING, NO SHRINKING, NO ILLEGIBLE JOINTS, NO BULK.
2 3.4 5.6 8 FOOT, ALSO WITH PATENT SPRINGS.
FLAT & TRIANGULAR BOXWOOD SCALES, BEST MADE.
PLUMB BOBS, THUMB TACKS, DRAWING INSTRUMENTS.

PRICE LISTS & QUOTATIONS PROMPTLY SENT.



IRON INSTEAD OF WOOD.
OF
GALVANIZED IRON
TUBING and CURB,
— FOR —
CHAIN PUMPS,
(Kegler's Patent)
Are Giving Universal Satisfaction,
BECAUSE:
They do not rust and accumulate filth—always clean. Extreme lightness is combined with strength and durability. No freezing. No waste of water by reason of enlarged reservoir at top of tubing. No annoying wheel at bottom. Easy to handle.
Tubing weighs less than 1/4 lb. per ft., is connected by couplings and can be attached to any make of curb.
Send for Catalogue.
Bellevue Pump Co., Bellevue, Iowa.

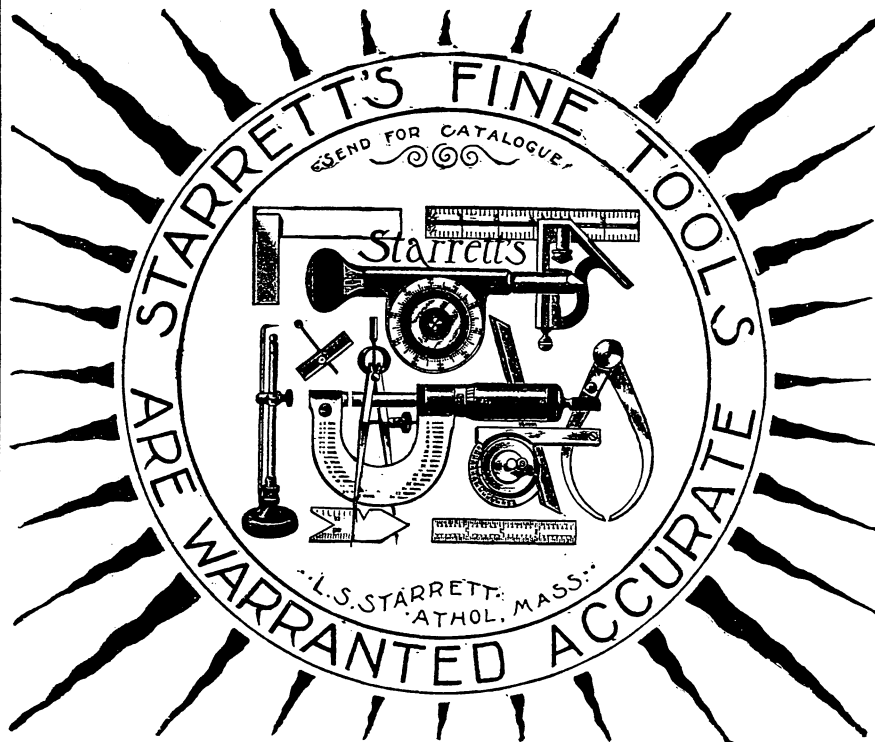


Athol Machine Co.,
Selling Agents.



HOLLANDS' OFFSET JAW VISE.
Specially adapted for drill press work where chucks cannot be used and equally good for special or regular bench work.
Hollands Mfg. Co.,
ERIE, PA.,
Manufacturers all styles VISES.

THOMAS CLARKE
HARDWARE AND GENERAL AGENT.
(FIRST-CLASS REFERENCES.)
60 PRINCE WILLIAM ST., ST. JOHN,
NEW BRUNSWICK.



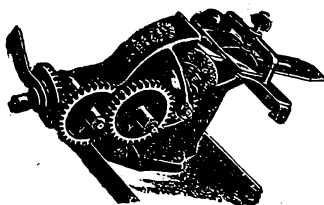
— WE ARE HEADQUARTERS FOR: —

STEEL * TAPES.

Don't buy foreign goods, when you can buy a better article of domestic manufacture.

LUFKIN RULE CO., Saginaw, Mich.
NEW YORK OFFICE, 21-2 Murray St.

CLIPPER GRINDERS.

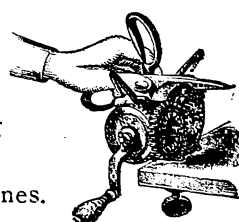


We make five sizes, Nos.
1, 2, 3, and 5.

No. 1 for joiners' use.

Nos. 2 and 3 for grinding
scissors and knives.

Nos. 4 and 5 power machines.



SEND FOR SPECIAL CIRCULAR TO
THE A. J. TRACY CO., Lim., - **18 Cliff St., New York, N. Y.**

GEO. N. CLEMSON, Pres.

S. S. BATTIN, Vice-Pres.

ROBERT J. JOHNSON, Treas.

F. B. EARLE, Sec.

THE NATIONAL SAW CO.,

OPERATING

Wheeler, Madden & Clemson Mfg Co., Wood-
rough & McParlin, Richardson Brothers, Har-
vey W. Peace Co., Monhagen Steel Works, Wood-
rough & Clemson, Pennsylvania Saw Co.

SEND FOR PRICE-LIST.

GENERAL OFFICE :
NEWARK, - - New Jersey.

SAWS

WENTWORTH'S PATENT NOISELESS SAW VISES,

WITH RUBBER CUSHIONED JAWS.

Prevent all vibration and render Saw Filing noiseless.
Will make no more noise than Filing on a Solid Piece of
Iron.

Have a Larger Sale than All Other Kinds Combined.

PRICE LIST.

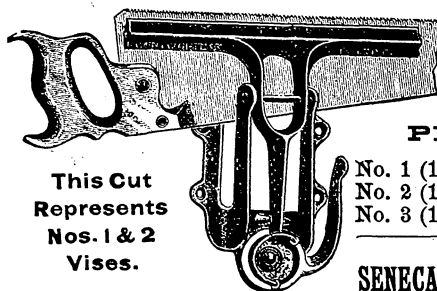
No. 1 (11 inch Jaws),	-	\$15.00
No. 2 (15 inch Jaws),	-	21.00
No. 3 (11 inch Jaws),	-	18.00

LIBERAL DISCOUNT TO THE TRADE.

LONGEST JAWS, HEAVIEST AND
BEST FINISHED.
Sold by all leading jobbers of gen-
eral Hardware at Factory Prices.

—MANUFACTURED BY—

SENECA FALLS MFG. CO., 255 Water St., Seneca Falls, N. Y.

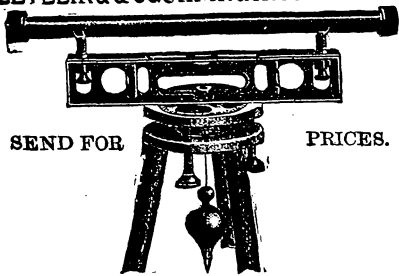


This Cut
Represents
Nos. 1 & 2
Vises.



No. 3 Vise.

LEVELING & SQUARING INSTRUMENT.



SEND FOR

PRICES.

C. F. RICHARDSON & SON,
ATHOL, MASS.

Manufacturers of Iron Levels and Carpenters,
and Architects' Transits.



NON-MAGNETIC \$2.00
AMERICAN WATCH.

The Premium Non-Magnetic
Watch has a specially con-
structed American Lever
Movement, in Case of non-
conducting metal, and is
fully warranted to with-
stand any attempt at mag-
netization, and to keep
accurate time around or
against a dynamo. Every
dynamo hand wants them.
Mailed postpaid for \$2.00
each; 3 for \$5.; 1 doz., \$18.00
R. H. INCERSOLL & BRO.,
65 CORTLANDT STREET, NEW YORK.

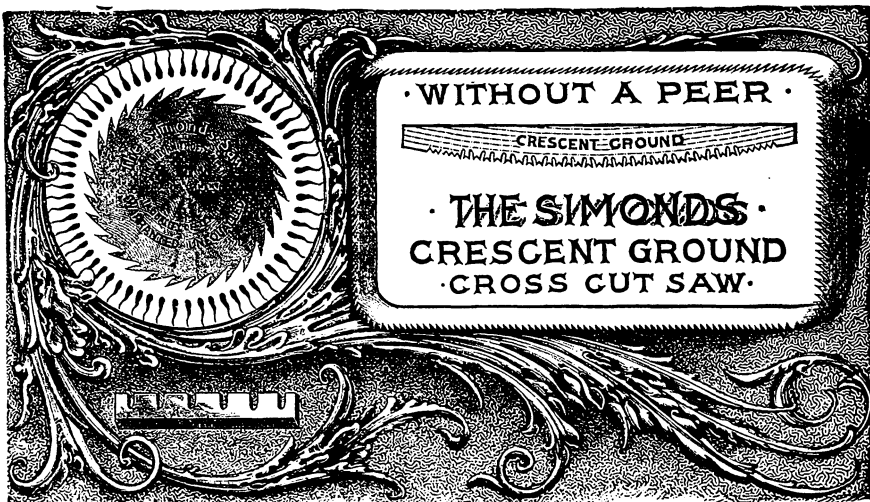
Electric Motor Construction for Amateurs

By C. D. PARKHURST.

Gives directions and working drawings
for making an electric motor to run sew-
ing machines, small lathes, etc., with
rules for constructing the battery to fur-
nish the electrical current, and much
practical relative information.
A table indicating the difference in
wire gauges is included.

Price, \$1.00.

Sent, post-paid, upon receipt of price, by
DAVID WILLIAMS, Publisher and Bookseller
96-102 Reade Street, New York.



· WITHOUT A PEER ·

CRESCENT-GROUND

· THE SIMONDS ·
CRESCENT GROUND
· CROSS CUT SAW ·

Simonds Mfg Co. Simonds Saw Co.,

FITCHBURG, MASS. CHICAGO, ILL. SAN FRANCISCO CAL. PORTLAND, ORE.

The Taintor Positive Saw Set.

Mechanics are now inquiring for this tool, and Hardware Dealers
should have them in stock, or at least have a sample.

For Prices and Discounts, address

WIEBUSCH & HILGER, LTD., SOLE AGENTS,

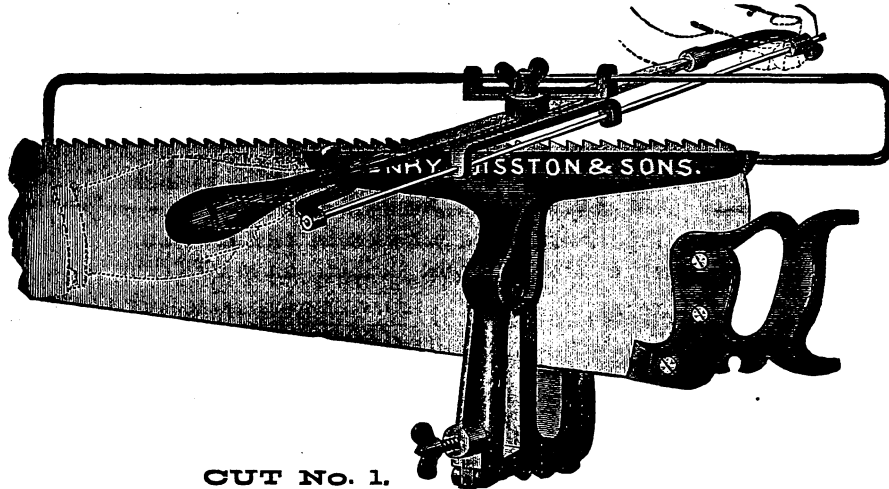
84 and 86 Chambers Street,

NEW YORK.



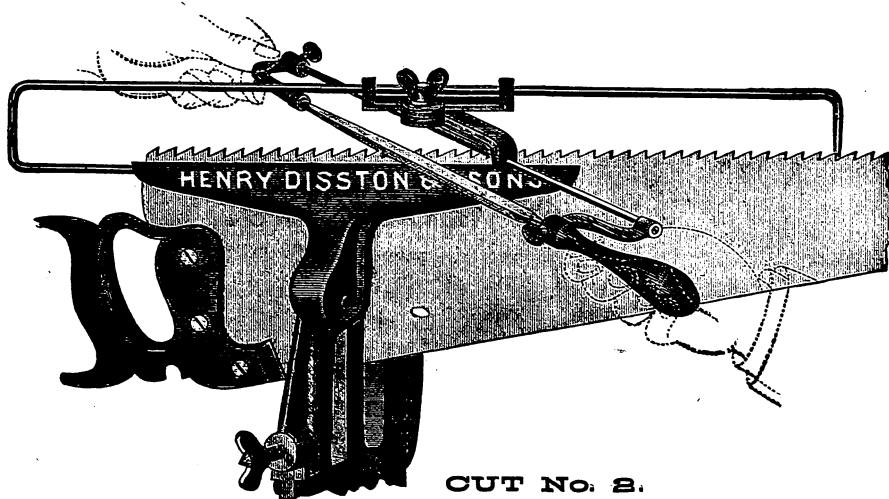
DISSTON'S Improved Saw Clamp AND FILING GUIDE.

ESPECIALLY DESIGNED TO ASSIST THOSE NOT SKILLED IN THE ART
OF SAW FILING TO FILE A SAW CORRECTLY.



CUT No. 1.

Cut No. 1 shows a saw and the attachment in proper position for filing the first side; and Cut No. 2 shows the saw and attachment reversed and in position to file the second side. There are three marks on one of the hubs of the swivel attachment, and one mark on the other. One of the three marks shows when it is in position No. 1, and the other designates when it is in position as shown in No. 2. The third, or centre, marks show when it is in position for filing Rip Saws.



CUT No. 2.


To obtain the correct position, loosen the wing nut and move the guide around to the point desired; after tightening wing nut, loosen screw in file handle, then turn handle until file gives the shape tooth wanted.

A good way is to select a tooth of correct shape and let file down into it, tighten set screw in handle, then file a tooth to see if the shape suits. If not turn the file a little to the right or left and try another tooth until the proper shape is obtained. Then file every other tooth, see cut No. 1; when one side is filed, reverse saw and attachment and adjust as in No. 2, and file the other teeth. For Rip Saws, place the file at right angles with the saw and file every tooth. Always keep the file as nearly horizontal as possible.

This filing guide is sold only attached to our No. 3 Improved Clamp or Vise, and not sold separately. We recommend this as the best saw clamp on the market, being quickly and easily adjusted, and not liable to get out of order.

Write for price including No. 3 Clamp, Filing Guide, File and Handle complete: Packed one in a wooden box.

Henry Disston & Sons, Philadelphia, Penn. INCORPORATED.



ARCADÉ FILE WORKS.

WARRANTED FILES AND RASPS.

EASTERN OFFICE,
NEW YORK.



FACTORY,
ANDERSON, IND.

WESTERN OFFICE,
CHICAGO.

THE FILES **THAT LEAD** THEM ALL

THE BEST EQUIPPED FILE WORKS IN THE WORLD.

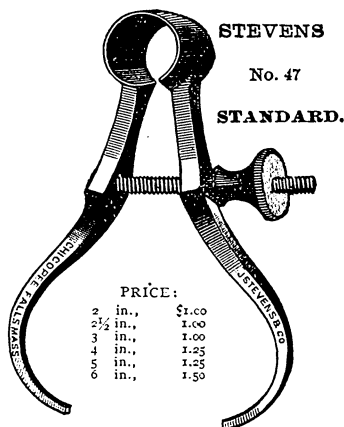
The fact that the Arcade File Works alone use the improved File Machinery recently invented by Alfred Weed, and the even heat of natural gas, enables them to produce files that cut faster and wear longer than any on the market.

Spring Calipers,
WITH PATENT WASHER.

Send for Catalogue of Com-
plete Line

Firm Joint Calipers
SAME QUALITY AND POLISH AS
THE OUTSIDE FIRM JOINT.
INSIDE FIRM JOINT CALIPER.

EXTRA FINE STEEL AND TEMPER.



Note New Improvements:—Round Knurled
Nut and Rocker Washer.

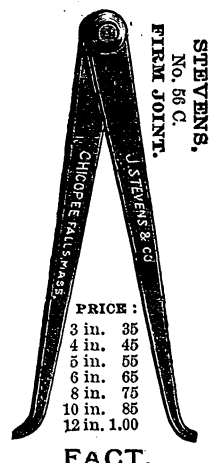
FINEST

Mechanical
Tools.

J. Stevens Arms & Tool Co.,

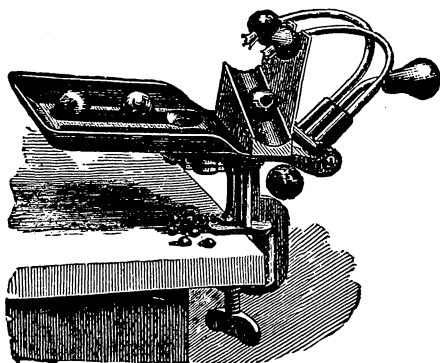
P. O. Box 5729,

CHICOPEE FALLS, - MASS.



FACT.

Always consult the large catalogue
of the J. Stevens Arms & Tool Co., for
the largest, neatest, most accurate and
useful line of FIRE ARMS and MACHIN-
ISTS' TOOLS made.



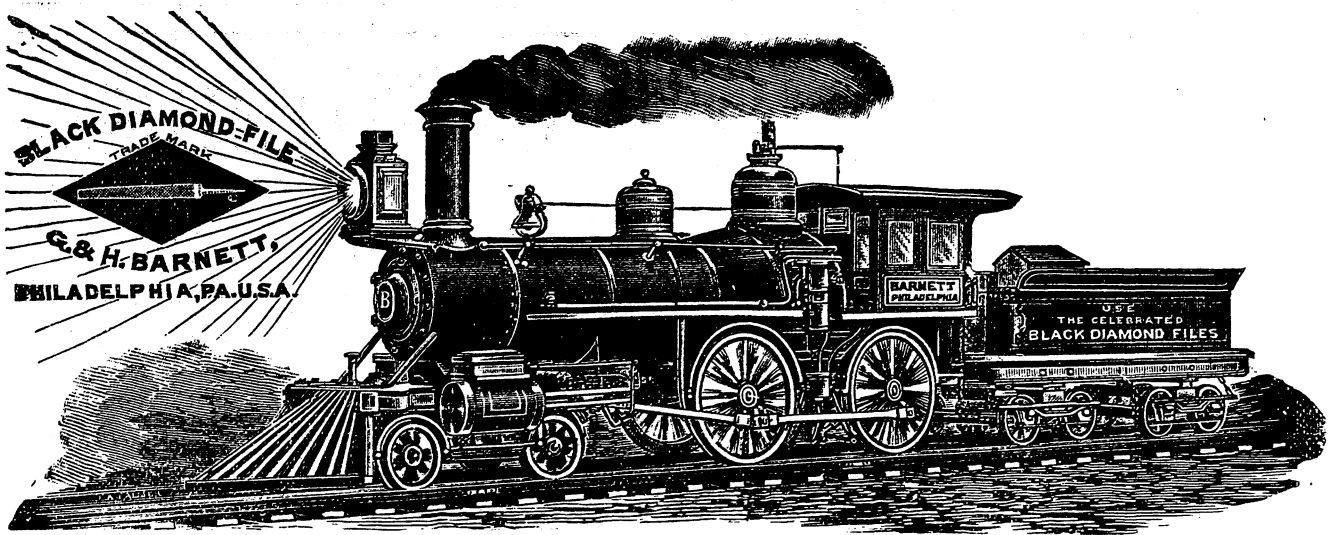
The Family Cherry Stoner

MADE BY

GOODELL COMPANY,

Antrim, N. H.,

Received highest award at World's Columbian Exposition. The only Cherry Stoner made that does not mash the fruit in removing the stone. No skill required to operate it. Cheaper and better than any other. Send in your orders early. Sold by hardware jobbers everywhere.



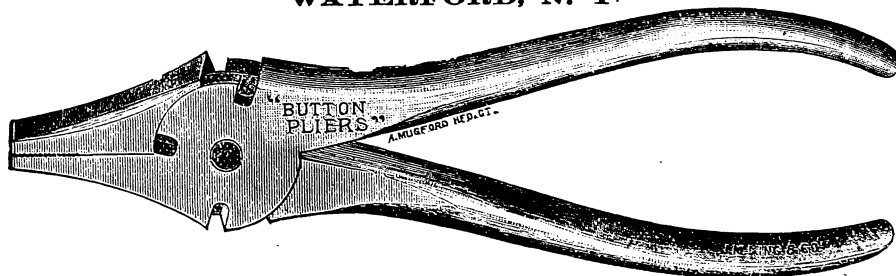
THE LARGEST AND MOST COMPLETE FILE WORKS IN THE WORLD.

NICHOLSON FILE CO.
PROVIDENCE, R. I.

3000
VARIETIES FILES
[X.F.] AND INCREMENT CUT FILES

J. M. KING & CO.,
WATERFORD, N. Y.

Manufacturers of
BUTTON'S



**Pat. Wire Cutter
AND PLIER COMBINED.**

Specially Adapted for Use on Wire Fence.

Also Manufacturers of BLACKSMITHS' and MACHINISTS' STOCKS and DIES, PLUG and TAPER TAPS, HAND, NUT and SCREW TAPS, PIPE TAPS and REAMERS.

Price-List on Application.

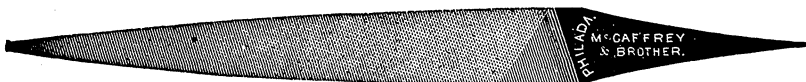
Established by DANIEL B. KING, 1829.

Philadelphia, 1876.



McCaffrey File Co.,
FIFTH and BERKS STS.,
PHILADELPHIA, PA.

For Superiority



Manufacture and keep in stock a full line of FILES and RASPS only, for which we claim special advantages over the ordinary goods, and ask domestic and foreign buyers to allow us to compete for their trade.

Superiority acknowledged wherever used, sold or exhibited.

BEST
CRUCIBLE
STEEL.

"TROJAN" HORSE RASPS AND FILES.

LOWEST
IN
PRICE.



STRONGEST
TOOTH

BANKER & WHITE,
(Troy File Works.)

TROY, N. Y.

LET
US
QUOTE.

N. Y. Agent, GEO. M. MATTESON, 111 Duane St.

HOWARD IRON WORKS.
BUFFALO, N. Y.

Manufacturers of

BENCH VISES.

Price Lists sent on application.



WM. KROGSRUD,
Engraver and Die Sinker,
61 Fulton St., N. Y.

Manufacturer of
STEEL STAMPS
For Every Purpose.
Steel Letters and Figures.
Burning Brands, Stencils,
&c. Send for Illustrated
Catalogue.



3

NICKLE, Silver and Bronze Metallic
Figures and Letters, Sizes 1/4 in to 3 in.
Pattern Letters, Steel Stamps, Brands,
Dies &c. Send for Reduced Price List.
We make a specialty of the Hardware Trade.
A. A. WHITE & CO., Providence, R.I.



John Wilson's Butchers' Knives and Steels, Skinning, Sticking, Farriers' & Shoe Knives,

Have established and maintained their reputation, for superiority,
against all Competitors, from

THE YEAR SEVENTEEN HUNDRED & FIFTY,
and are still in increasing demand. As in the past, it is the unalterable
DETERMINATION OF THE HOUSE TO SEND OUT NOTHING BUT WHAT IS OF THE HIGHEST POSSIBLE QUALITY.
WORKS: SYCAMORE STREET, SHEFFIELD, ENGLAND.

SOLE AGENTS FOR THE UNITED STATES,
Messrs. Hermann Boker & Co., 101 and 103 Duane St., New York.

The Amidon Tool Corporation,

Manufacturers of
A Complete Line of

Bit Braces

1451 Niagara St., Buffalo, N. Y.



CORNER BRACE.

AMERICAN TOOL COMPANY,
NEW YORK,
MANUFACTURERS OF

TOOL CHESTS

Of all sizes, complete with tools, for Hardware, Toy,
Notion and Variety trades.
Factory and Salesroom,

200 West Houston Street, near Varick.
Also Machinists' Tool Chests, empty. Illustrated Cata-
logue and prices furnished on application.

WRITE TO

The Bourke Manufacturing Co.,

YOUNGSTOWN, OHIO,

For catalogue and discounts on

Ventilating Sash Lock and Fastener,
Diagonal Sash Lock and Fastener,
Extension Handle Couplings,
Galvanized Iron Window Cleaners,
Floor Scrubbers and Dryers,
Excelsior Bar Cleaners,
Combination Brush, Mop and Sponge Holder.

F. S. HUTCHINSON CO.,

Paragon Self-Retaining Dumb Waiters,

HAND AND BELT POWER ELEVATORS,

Aldrich Building, 32 Warren Street,
NEW YORK.

SPECIAL BRONZE HARDWARE

MADE TO ORDER.

Ransom Hardware Co., Burlington, Vt.

Porcelain Lined Lemon Squeezers



Best Common Mouse Traps, Steak Hammers,
Boot Jacks, Lap Boards, Beacon Hill Pat. Mouse
Traps, Mallets, Bung Starters, Hand Screws.
Ripley Mfg. Co., Unionville Conn.

ESTABLISHED 1816.

WHITE, VAN GLAHN & CO.,

15, 16 and 17 CHATHAM SQUARE, N. Y.,

SOLE AGENTS IN THE U. S. FOR THE CELEBRATED

J. B. Addis & Sons' Wood Carvers' Tools.

Lawn Mowers, Barb Wire, Green Wire Cloth, Poultry
Netting and Farming Tools, Refrigerator Hard-
ware and Condit's Ice House Fasteners.

SICKELS, SWEET & LYON,

Wholesale Hardware.

Office, 35 Barclay St. Warehouse, 40 Park Place, New York.

Carry Stock of Jackson, Mich., Farming Tools

Shipments from Factory if preferred.

N. Y. AGENTS FOR

Cortland Door and Window Screen Co.; Union Steel Screw Co., Eagle
File Co., Perfection and New Easy Lawn Mowers.
Spring Catalogue No. 7 issued in February.

SHARP TOOLS are a NECESSITY to a good workman,

But without a GOOD WHETSTONE they are an impossibility.

That is why it is always economy to buy

PIKE'S WHETSTONES.

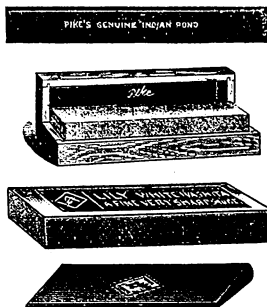
Pike's Indian Pond Scythe Stone, Strong, Sharp
Grit, Quick Cutting.

Scythe Stones.

Oil and Water Stones.

GREEN MOUNTAIN,
LAMOILLE,
BLACK DIAMOND,
PREM. QUINNEBAUG,
WHITE MOUNTAIN,
GENUINE RAGG,
WILLOUGHBY LAKE.

WASHITA,
ARKANSAS,
HINDOSTAN,
WATER-OF-AYR,
RAZOR HONES,
TABLE HONES,
AXE STONES, ETC.



THE PIKE MFG. CO., - Pike Station, N. H.

DIRECTIONS FOR USING

WILLIAMSON'S NEW POWER CORK SCREWS.

KEEP ON TURNING, DO NOT PULL.

No. 1243, Nickel Plated, Apple Wood Handle, \$5.00 per dozen.
" 1443, " " Rosewood " 5.50

For Discounts and Prices of other styles send for Catalogue.

C. T. WILLIAMSON WIRE NOVELTY CO., NEWARK, N. J.

Manufacturers of Wire Specialties for the Trade.





EVERYBODY knows that **TORREY RAZORS** are STANDARD for quality and finish, BUT do all dealers realize that these goods can compete with even foreign makes?

TO PROVE THIS

A sample dozen Torrey Razors, assorted, to retail from **50 cents to \$2.50**, will be sent on approval to any responsible hardware dealer mentioning this advertisement.

A Special Offer, 100 per cent profit for the dealer.

J. R. TORREY RAZOR CO., P. O. Box 1016, Worcester. Mass.



"Stamped with the **BUCK'S HEAD**."



TRADE-MARK
TRADE-MARK.

BUCK BROTHERS, MILLBURY, MASS.

The Most Complete Assortment in the U. S. of
Shank, Socket Firmer and Socket Framing
Chisels, Fine Bevel Edge Chisels, Plane Irons.

TWO PRIZE MEDALS,

No. 1098 and No. 1099, AT WORLD'S FAIR.

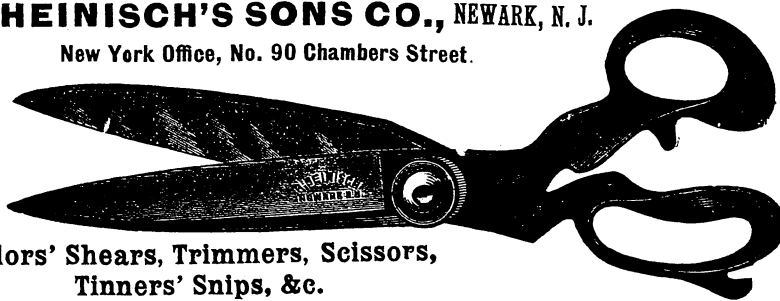
Buyers are cautioned against any parties who claim a recent connection (or any connection for over 20 years) with Buck Bros., or who represent goods as our make not stamped with the **BUCK'S HEAD** or **BUCK BROTHERS** in full.

ESTABLISHED, 1825.

INCORPORATED, 1892.

R. HEINISCH'S SONS CO., NEWARK, N. J.

New York Office, No. 90 Chambers Street.



Tailors' Shears, Trimmers, Scissors,
Tinners' Snips, &c.

CATALOGUES AND PRICES ON APPLICATION.

We have no contract with Messrs. Hermann Boker & Co. as Agents for the sale of our goods.

HIGHEST AWARD PARIS EXPOSITION, 1889.

ESTABLISHED 1837.
INCORPORATED 1892.



THE L. & I. J. WHITE CO.,
BUFFALO, N. Y.

MANUFACTURERS
OF
EDGE TOOLS.
Coopers', Carpenters' and Ship Tools, Plane Irons,
Cleavers, &c. Full Line Chisels.

1853

1894

Highest Awards at the World's Exposition for Superior Tools.



CHARLES BUCK,

sole surviving member of the original firm of BUCK BROS., and proprietor of the
MILLBURY EDGE TOOL WORKS, MILLBURY, MASS.,
Manufacturer of the

GENUINE STANDARD BUCK TOOLS.

All kinds of Shank, Socket Firmer Chisels and Gouges, Cut and Double Irons, S. D. Bits, etc. Send for Catalogue. CAUTION.—Buyers wanting the standard Buck Tools will see that they get only those stamped **CHARLES BUCK** when ordering from the jobbing houses. Address all correspondence to **CHARLES BUCK** or the

Millbury Edge Tool Works, Millbury, Mass.

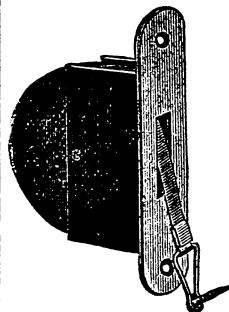
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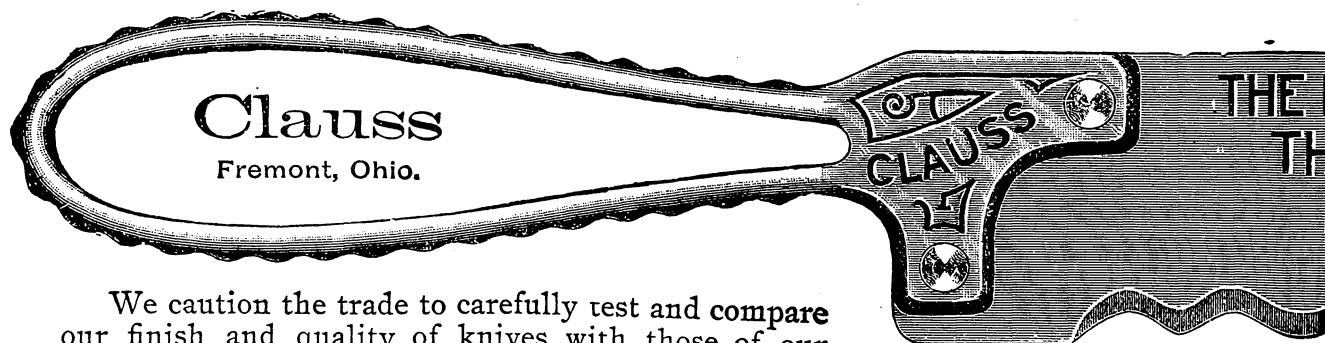


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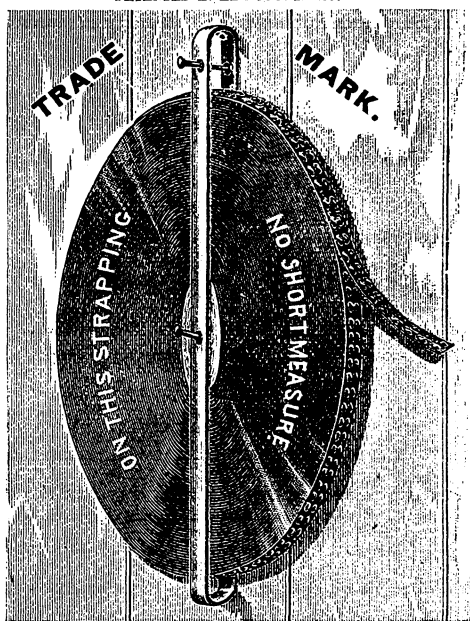
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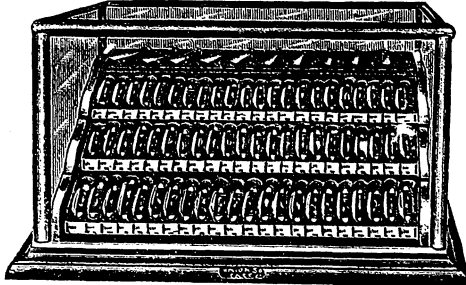


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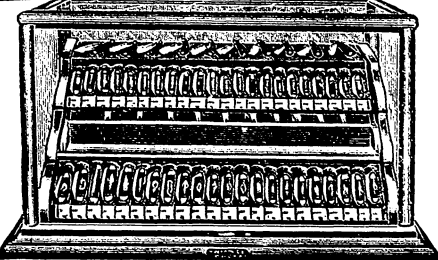
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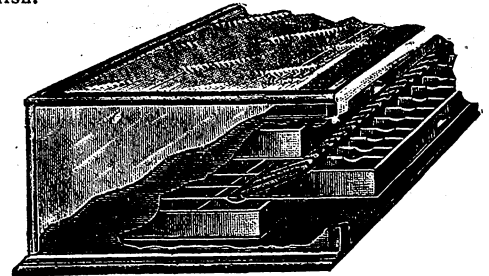
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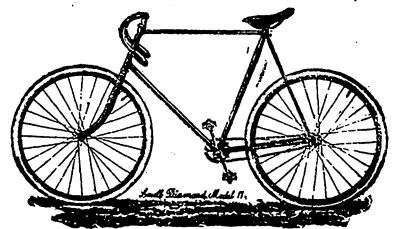
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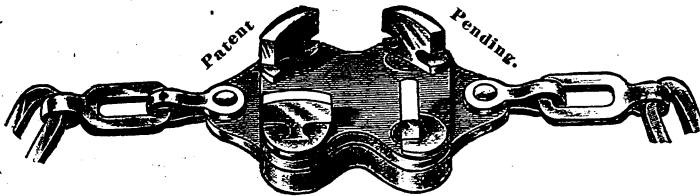
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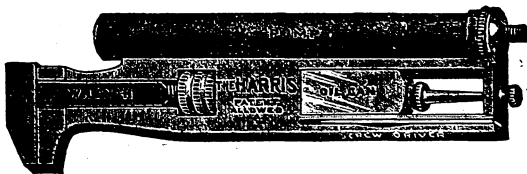
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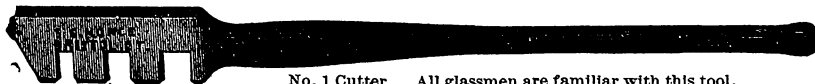
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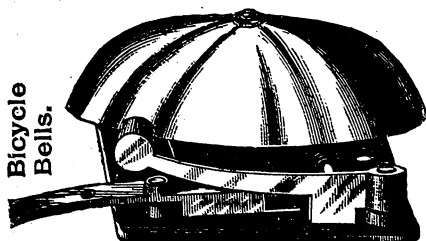
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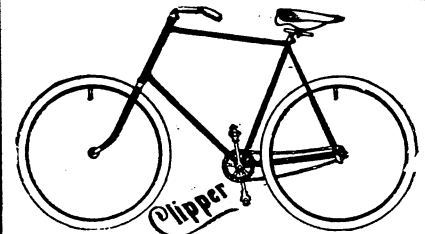
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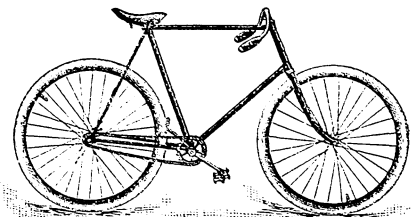
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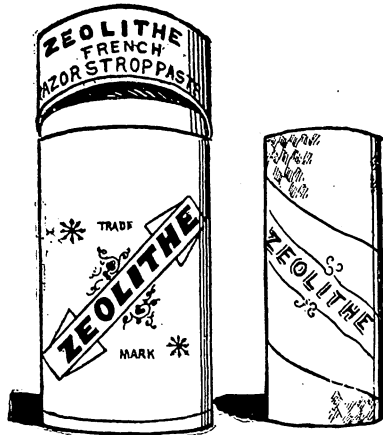
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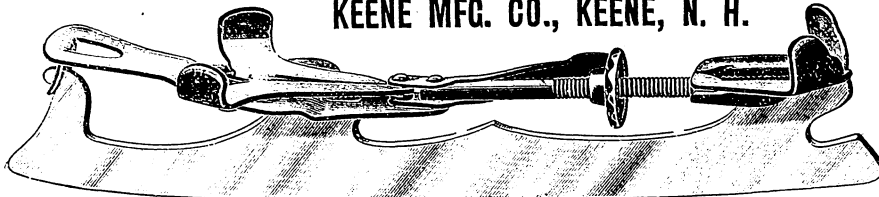


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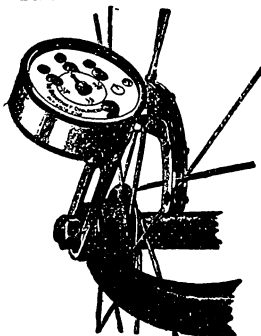
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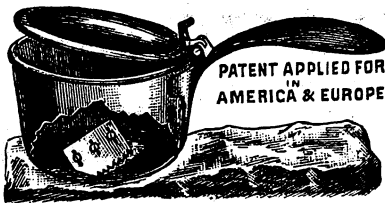
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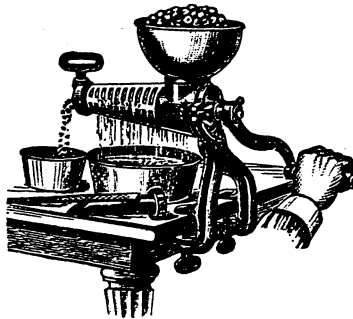
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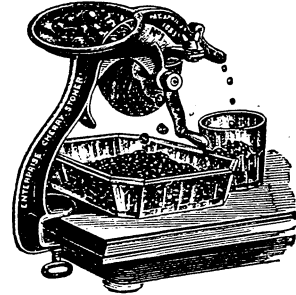
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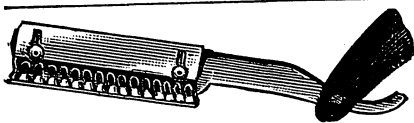
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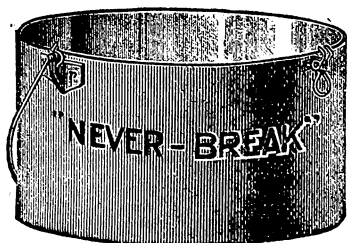
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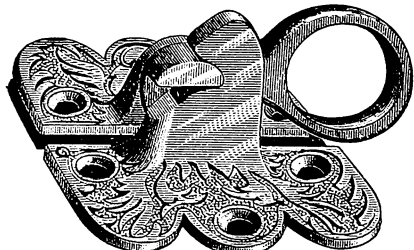


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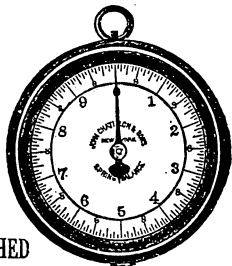
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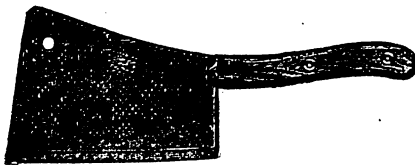


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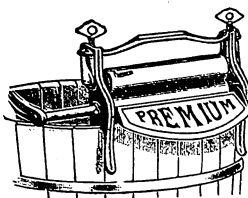
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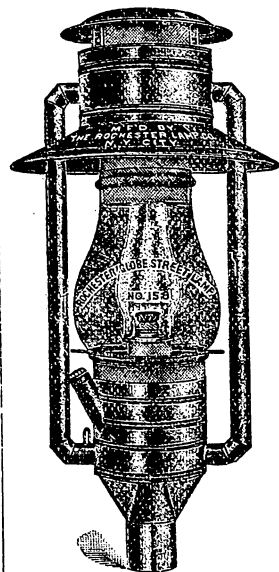
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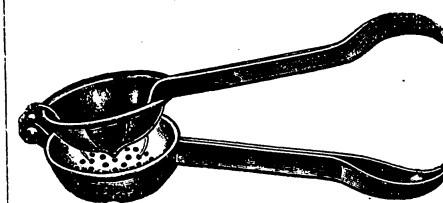
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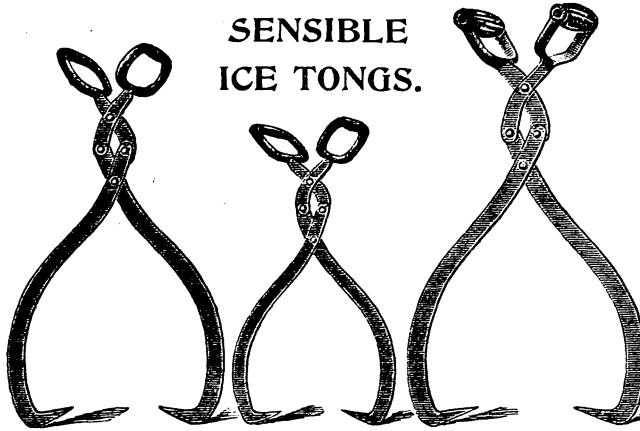
Manufacturers of **SAD IRONS AND HARDWARE.**

All of our Ice Tongs, for loading or hand use, are made of steel, with tempered points; causing them to be very light and stiff.

The Shape, Finish and Quality of all our goods is second to none.

Factories,
Rochester, N. Y.
Pottstown, Pa.

SENSIBLE ICE TONGS.



REGULAR SIZES, 12 IN., 16 IN., 20 IN., 24 IN., 28 IN.
Special sizes made to order.

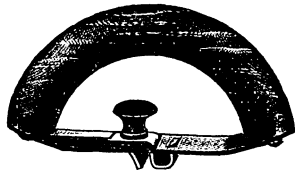
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Our Improved Duplex Tongs

give the widest sweep at the points, with but comparatively small action at the handles, and the duplex action gives greater force.

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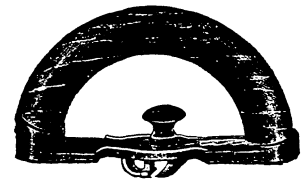


PATENT APPLIED FOR.
The Steel Stretcher Handle,
for Mrs. Potts' Sad Irons,
in Hazel Wood only.
No. 110.

The Cleveland Wood Turning Co.,
710-726 Scranton Ave., Cleveland, O.

Special work in Handles and Wood Turning of all kinds. Our line of regular made Pool Handles is the best.

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Walnut, Japanned, No. 1.
Walnut, Tinned, No. 2.
Hazel, Japanned, No. 10.
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WATER COOLERS.

Handsome
New Designs.
Double Walled.
Packed.

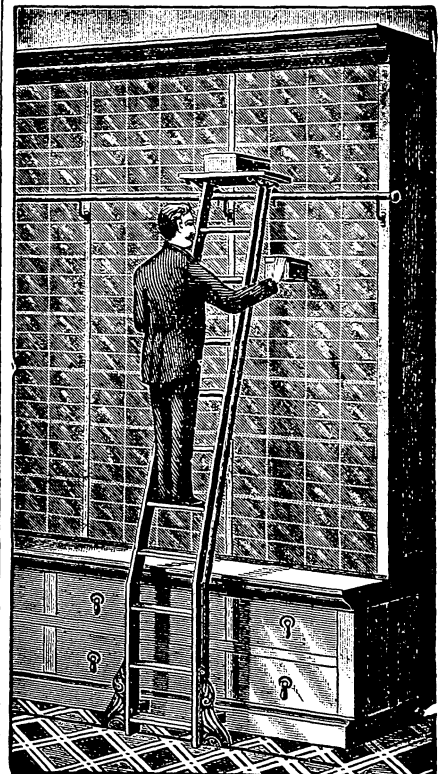


No. 82,	2 gals.	\$3.40
" 83,	3 "	4.00
" 84,	4 "	.....	4.50
" 86,	6 "	.....	5.60
" 93,	3 "	.....	4.60
" 94,	4 "	.....	5.25
" 96,	6 "	.....	6.50
" 98,	8 "	.....	7.75
" 110,	10 "	.....	12.50
" 114,	14 "	.....	16.75

Discounts Furnished upon Request.

Sidney Shepard & Co.,
BUFFALO, N. Y.

C. Sidney Shepard & Co.,
CHICAGO, ILL.



FLOOR TRACK BICYCLE LADDER

Highest Award Columbian Exposition.

No other Ladder Service can approach the "Bicycle" in ease and convenience of operation. Compared with others they work like a bicycle beside a lumber wagon.

Can be applied to any kind of shelving made. See this space next week for other styles.

Send for Illustrated Catalogue and prices to

THE BICYCLE STEP LADDER CO.,
50 State street, Chicago, Ill.



ALUMINUM

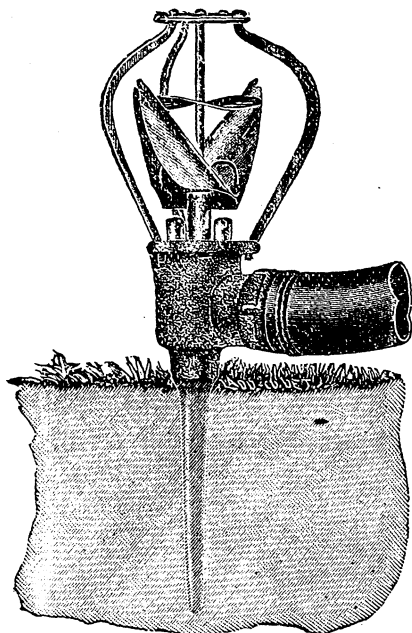
Ingots, Sheets, Rods, Tubes, Wire and Castings, Cooking Utensils and Table Ware, Tea and Coffee Pots, Chafing Dishes, Rice Boilers, Tea Kettles, &c.

WRITE FOR THE WOHLER ALUMINUM COMPANY,
CATALOGUE. 55 Jackson Street, - Chicago, Ill.

The Best Lawn Sprinkler Ever Made at Any Price.

Imitation is the sincerest flattery. They copy our ideas, but they don't get there with the kind of Sprinkler the people want.

This Sprinkler will throw Water in a complete Circle or Half Circle as desired.



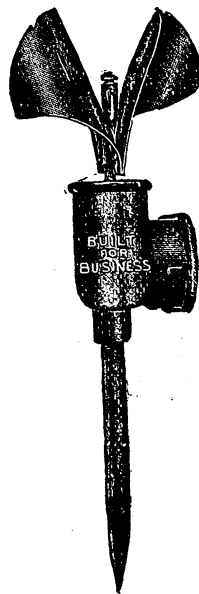
Patented October 20, 1891.

Bonnette's Arc Lawn Sprinkler.

We claim this is the only perfect Sprinkler in existence. It is simple, will not wear out nor clog up. Its full flow always, whether on the whole or half circle, prevents the straining or bursting of the hose. This is not true of any other sprinkler made. It is well made and handsomely nicked, is boxed singly with full directions how to use it. Its merits are without question pre-eminently superior to any other.

The Best Low Priced Sprinkler in America.

"The HUSTLER" LAWN SPRINKLER. BUILT FOR BUSINESS.



We down all competition,
And admire mere opposition,
Yet under no condition
Will we budge from our position,
THAT THIS IS
The Most Practical,
The Most Sensible
AND THEREFORE
The Most Serviceable

Bonnette's Patent.

Lawn Sprinkler ever put upon the market at a Popular Price.

PLEASE SEND IN YOUR ORDERS TO

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BONNETTE ARC LAWN SPRINKLER CO., Bay City, Mich.

GIBBS MANUFACTURING CO., Canton, Ohio.



Law without Lawyers.

A Compendium of Business
and Domestic Law for
Popular Use.

By H. B. COREY,
Member of the New York Bar.

PRICE, \$1.00. Post-paid.

A simple, clear and accurate presentation of the general laws, and of the laws of the several States relating to the rights of property, contracts, debts, partnerships, bankruptcy, insurance, corporations, marriage, divorce, &c., &c., with which are included correct copies of all legal instruments and forms, such as notes, deeds, mortgages, leases, wills, &c., and a dictionary of legal words and phrases.

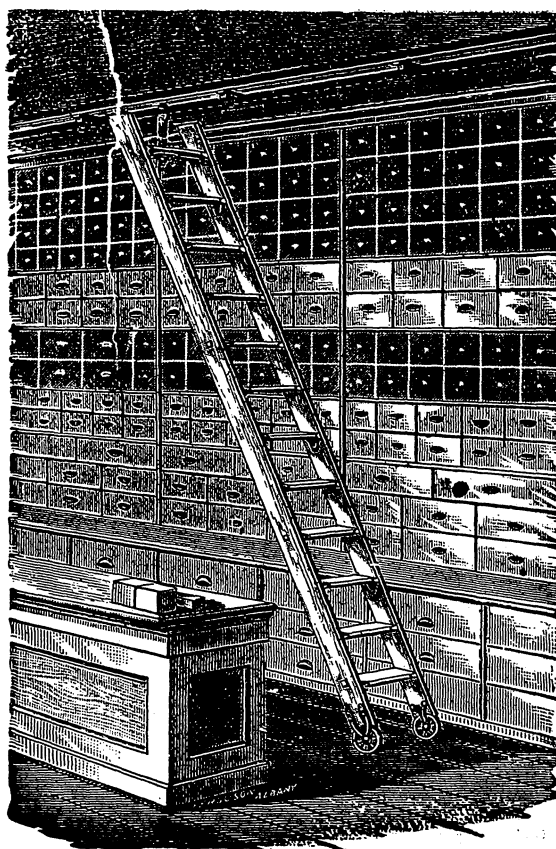
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THE "NOISELESS" STORE LADDER.

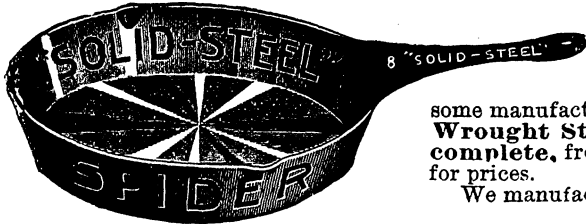


The latest and best. Perfectly noiseless. Neat in appearance.

Manufactured by

M. CROISSANT,

ALBANY, N. Y.

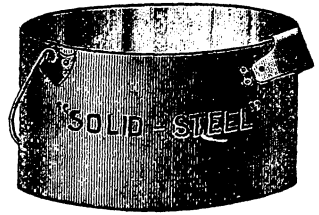
"SOLID-STEEL" SEAMLESS HOLLOW WARE.

No Seams, no Rivets in "Solid-Steel" Ware.

Brilliant Finish.

Notwithstanding the claims made by some manufacturers' agents our spiders are made from **Wrought Steel, Without Seams or Rivets, complete, from a single piece of metal.** Write for prices.

We manufacture our own goods.



"Solid-Steel" Maslin Kettle.

The Cleveland Stamping & Tool Co., Cleveland, O.

We do Light and Heavy Stamping and Blanking. Also build Dies and Stamping Machinery.

NEW WATER MOTOR, \$5

BOLGIANO'S LITTLE GIANT, No. 1,

Will run your Sewing Machine, Fans and other Light Machinery.

A Week's Work

Done in a Day.

No Plumbing

Required.



SOMERVILLE, MASS., Nov. 21, 1893.
THE BOLGIANO MFG. CO., Baltimore, Md.
Gentlemen:—Your No. 1 Motor just received. I am more than pleased with it. It will do all you claim for it. I have tried it with several different kinds of light machine work. I shall always have the best word to say for this little wonder. Yours truly,
CHAS. E. PARKBURST, 70 Walnut St.

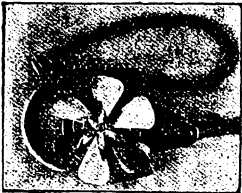
NOBLESVILLE, IND., Jan. 29, 1894.
THE BOLGIANO MFG. CO., Baltimore, Md.
Gentlemen:—The "Little Giant" Water Motor came to hand in due time, and works the sewing machine like a charm.
Yours very truly,
NOBLESVILLE MILLING CO.

No. 2, \$10. Fans, Ice Cream Freezers, Lathes, Scroll Saws, Church Organs, etc.

COLORADO SPRINGS, COLORADO.

THE BOLGIANO MFG. CO., Baltimore, Md.
Gentlemen:—We received the "Little Giant" Motor No. 2 on April 28, and have tested it in every possible way, and find that it works perfectly. At present it is running an eight and twelve old style Gordon press, and takes it at a very fast rate. We are more than pleased with it, and we will recommend it to everybody as a safe investment for their money.
Yours respectfully,
WOODS BROS.

NO. 3 MOTOR, \$15. For Fans, Printing Presses, Grindstones, All Sizes of Light Fans for sale. Coffee Mills, Washing Machines. Send for Circulars.

**BOLGIANO'S Electric Fan Water Motor.**

CURRENT FREE,

As it Connects with any Faucet.

SAMPLE, \$6.00.

Wholesale and Retail.

NEW HOT AIR GAS IRON, \$3

Bolgiano's Perfection Gas Iron enables you to do your ironing without the use of a stove, and is in every way superior to anything of the kind ever offered the public. Gets hot in 5 minutes and costs 5 cents a day to heat.

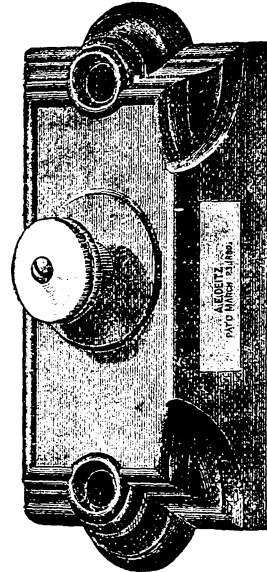
You may send me One Dozen Perfection Gas Irons. Sold 700 charcoal irons. Expect to sell many more of yours.
JOHN WANAMAKER, Philadelphia, Pa.

Send for Descriptive Circulars.

THE BOLGIANO MANUFACTURING CO.,
WHOLESALE AND RETAIL,
415 WATER ST., BALTIMORE, MD.



BOLGIANO'S PERFECTION GAS IRON.
Patent applied for, 1894.

A. E. DEITZ.

No. 172 Lock.

J. C. McCARTY & CO., Agents, 97 Chambers and 81 Reade Sts., New York.
Factory, BROOKLYN, E. D., N. Y.

Reliable Torches are what you want.



Made either for Oil or Gasoline.



These Torches are particularly adapted for use in Factories, Foundries, Machine Shops, Rolling Mills, Blacksmith Shops, Warehouses, &c. They make a strong white light, are free from smoke and are not affected by wind or rain. They are convenient and portable. These Torches can be run at an expense of about one-half cent to one cent per hour, burning a bright, steady light which is ten times greater than the light of an ordinary gas burner.
Write us for prices. A liberal discount given to the trade.
Manufactured by
THE SCHNEIDER & TRENKAMP CO.,
Nos. 479 to 497 Case Ave., Cleveland, Ohio.

GASOLINE & OIL
TORCHES.

TINNERS' & PLUMBERS
FURNACES.

PAINT
BURNERS.

THE DANGLER STOVE & MFG. CO., CLEVELAND, O.

INTERCHANGEABLE
LOCK-CORNER SHELF BOXES,
Screw Cases, &c.,
FOR THE HARDWARE TRADE.
A. H. GREEN,
22 Park Place, New York.

THE VICTOR DOUBLE TROLLEY STORE LADDER.

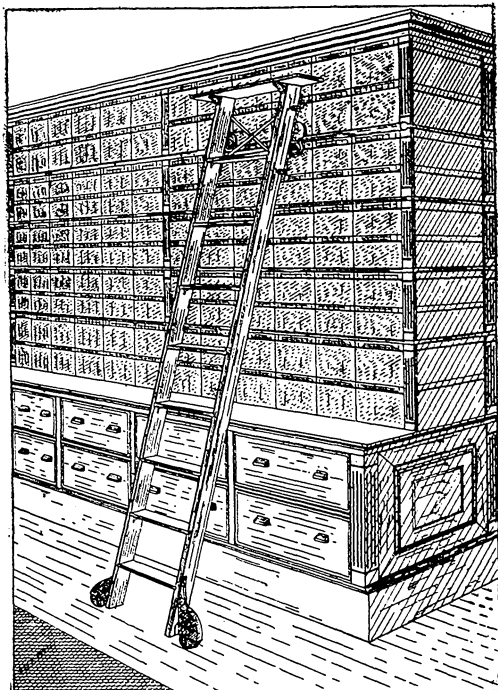
WORKS ON A NEW PRINCIPLE.
EASILY.
NOISELESSLY.

HANDY ILY ADJUSTED
TO USE.

COSTS SO LITTLE THAT
EVERY ESTABLISHM'NT
CAN AFFORD TO HAVE IT

All orders are sold subject to thirty days' trial and if not satisfactory may be returned at our expense.

SEND FOR CIRCULAR.



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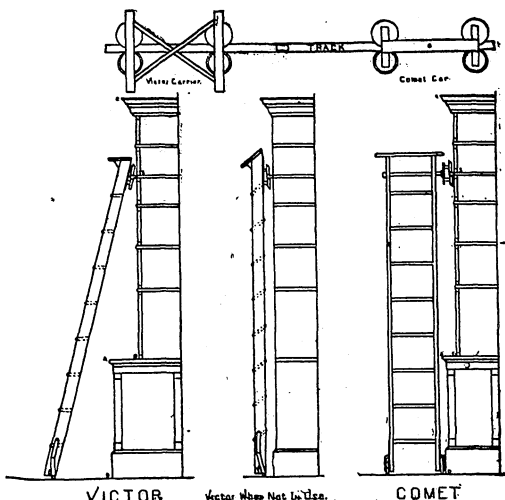
Risk your neck
on a barrel.

DON'T

Try to jump
with mouth full of
screws and hands full
of something else.

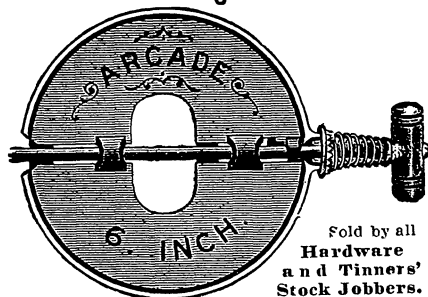
DON'T

Fail to send for
price of Victor Lad-
ders.



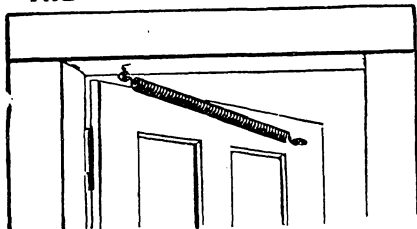
GOBURN TROLLEY TRACK MFG. CO., HOLYOKE, MASS. ALSO PARLOR, BARN AND FIRE-DOOR HANGERS.

Made by **Arcade Mfg. Co., Freeport, Ill.**



Fold by all
Hardware
and Tinnerns'
Stock Jobbers.

THE PERFECT DOOR SPRING.



Cheap, Simple, Durable, Effective.
Best Screen Door Spring made. Send for our list of references, comprising some of the first houses in the land. They sell readily, and that is what you are looking for. Drop us a postal.

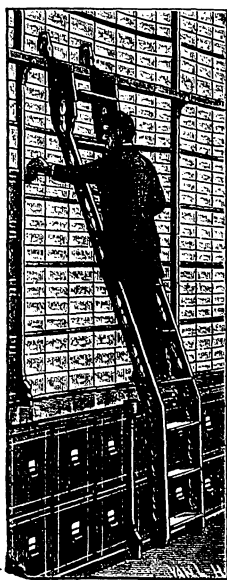
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40 & 42 Noble St., Jersey City.

Electric Toy Making, Dynamo Building and Electric-Motor Construction. By T. O'CONOR SLOANE, A.M., E.M., Ph.D. This work treats of the making at home of electrical toys, electrical apparatus, motors, dynamos, and instruments in general and is designed to bring within the reach of young and old the manufacture of genuine and useful electrical appliances. The work is specially designed for amateurs and young folks. Very fully illustrated.....\$1.00

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An Investment

- ✱ That soon pays for itself, and a fixture you will wonder
- ✱ how you have got along without. Hundreds of recommendations to this effect. This is without doubt the best device of the kind on the market to-day. Steel rail planed to get the smoothest surface. Brackets made to fasten to standards, pilasters, or shelving direct. Can be adjusted to shelving with wide or narrow ledge, and can also be fitted where there is no ledge and can be used on circular rail as well.

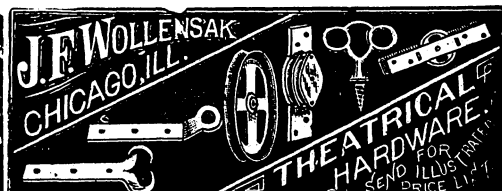
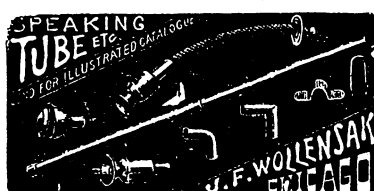


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A postal card will get our Catalogue.

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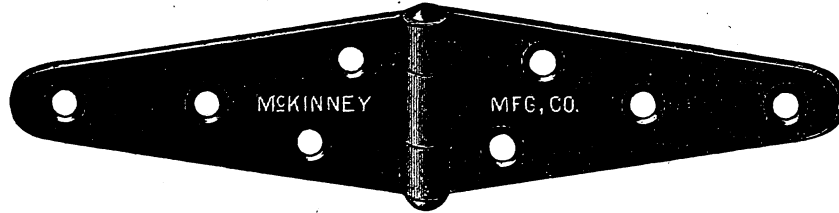


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STANDARD GOODS.

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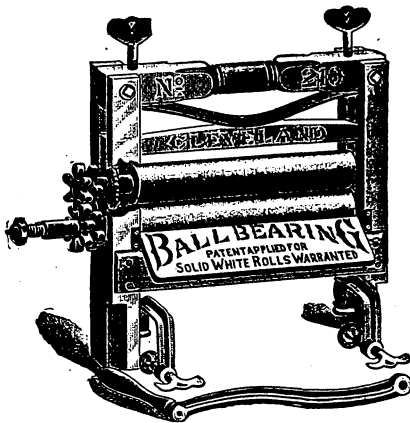
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LIST.



ORDERS FILLED
ON SIGHT.

"NONE BETTER."

A GOOD PROFIT TO DEALERS



This Wringer has **BALL BEARINGS** same as a bicycle. Runs so easy it's play to use it. No other like it. Best made. Sells for more than the common kind. Women using it won't have any other, tell their neighbors, sales increase, everybody satisfied. Pays you to push it.

SEND FOR SAMPLE.

ALL OTHER KINDS OF WRINGERS.

THE PEERLESS MANUFACTURING CO.,
CLEVELAND, OHIO.

We also make High Grade Bicycles.

OSGOOD & HOWELL, Pacific Coast Agents,

132 Market St., San Francisco, Cal.

THIRD REVISED EDITION.

THE IRON AGE STANDARD HARDWARE LISTS

FOR USE IN PRICE BOOKS.

Compiled by R. R. WILLIAMS, Hardware Editor of The Iron Age.

This pamphlet contains the principal standard Hardware price-lists in as clear and compact an arrangement as possible, so as to permit their being advantageously cut out and inserted in the price book. In order to make them adapted to this use they are printed on thin and tough paper of fine quality and on only one side of the paper.

Saucepans and Round Boilers.

Pnts.	Plain	Turled.	Third or End.
1	\$0.30	.35	.39
1½	.32	.37	.44
2	.35	.39	.48
3	.42	.47	.56
Quarts.			
2	.50	.56	.63
2½	.53	.59	.68
3	.55	.62	.73
4	.60	.68	.84
5	.65	.75	.96
6	.70	.81	1.11
7	.75	.84	1.21
Gallons.			
2	.85	.96	1.31
2½	1.05	1.18	1.56
3	1.20	1.35	1.70

The success of the effort to give the lists in small space is illustrated in many of the lists, in which a clear and condensed arrangement is secured. For instance, the wrench list occupies but 3 inches by ½ inch, while the list of Stove Hollow Ware, in very small space, gives the list prices on a large and important line of goods which often occupy several pages in catalogues. In several lists, such as Strap and T Hinges and Butts, a new arrangement is adopted, which is regarded as presenting these lists in a very convenient as well as condensed form.

As is obvious from the lists herewith reproduced, the shape and size of the different lists varies greatly, the aim being to give each list the smallest and most convenient arrangement possible. None of the lists are, however, more than 3½ x 6 inches in size, very few of them being as large as this and most of them very much smaller. In use it is intended that they shall be trimmed closely before they are inserted in price books,

when they may be attached either by one edge close to the hinge of the book, as will, perhaps, be most convenient with the larger lists, permitting the use of the entire page for memoranda, or the smaller lists may be pasted on the page in connection with the entries in regard to discounts, freights, &c. Many of the lists are so compact in arrangement as when thus inserted to leave ample room for recording quotations.

Wrenches.

Inches.	6	8	10	12	15	18	21
Black...	\$9.00	\$10.00	\$12.00	\$14.00	\$24.00	\$30.00	\$36.00
Bright..	10.00	11.00	14.00	16.00	26.00	32.00	38.00

Some merchants use this pamphlet for reference, checking off invoices, etc., as it gives the leading lists in a more convenient form than they can otherwise be obtained. The lists are, however, intended primarily to be cut out

and inserted in price books, and can be used in connection with any of The Iron Age Hardware Price Books.

That the Standard Hardware Price Lists meet a want of the trade is evident from the fact that a Third edition is already called for.

EVERY HARDWAREMAN SHOULD HAVE A COPY. Price 25 cts.

Sent, postpaid, on receipt of price, by DAVID WILLIAMS, Publisher, 96-102 Reade Street, New York.

Stove Hollow Ware.

Ground and Unground.

No.	6	7	8	9	10	11
Pots.....	\$0.65	.75	.85	1.00	1.25	1.75
Kettles.....	.55	.65	.70	.85	1.00	1.40
T Kettles.....	.75	.80	.90	1.00	1.25	....
Spiders.....	.27	.30	.35	.40	.50	.60
Griddles Round	.22	.25	.27	.30	....	....
" Long..	.40	.50	.60	.75	....	....

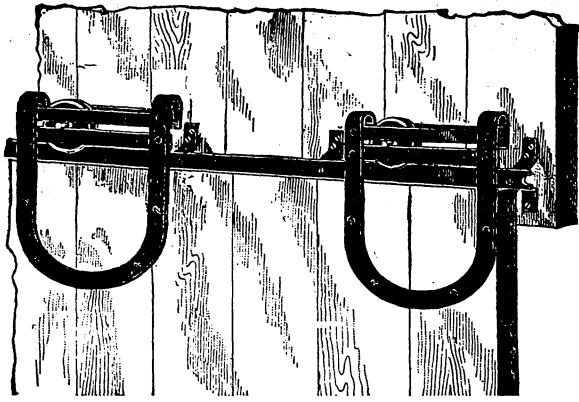
SCOTCH AND YANKEE BOWLS.

No.	1	2	3	4	5	6
Scotch Bowls..	\$0.35	.40	.45	.50	.60	.70
Yankee Bowls.	.35	.45	.55	.65	.75	.90

Glue Pots.

Tinned or Enameled

No.	4/0....	\$4.50	No. 2	.....	\$8.40
3/0....	5.00		3	.....	10.28
2/0....	5.50		4	.....	12.43
0	6.00		5	.....	14.58
1	6.75		6	.....	18.94



Lane's Patent Steel Barn Door Hangers,

"O. N. T." Track for same.

The first Anti-friction Steel Door Hanger placed upon the market and to-day stands as the original and best. Sold in all the States of the Union, as well as abroad. Also Lane's Noiseless Steel Parlor Door Hanger, using Single Steel Track, a great success.

Lane's Pat. Self-measuring Faucet, measuring liquids as drawn. Swift's Coffee Mills in great variety.

Manufactured by **LANE BROS.**, Poughkeepsie, N. Y.

JOHN H. GRAHAM & CO., General Agents, 113 Chambers St., NEW YORK.

IDLEWILD HAMMOCKS.

TWELVE HAMMOCKS ASSORTED, } net to the dealer \$16.20.

HOT WEATHER STUFF.

We are putting out sample bales of

IDLEWILD HAMMOCKS, containing 12 numbers, all medium and low priced goods.

WILL PAY YOU 50% PROFIT.

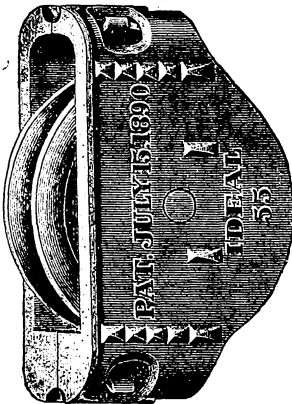
JAMES W. EUSTIS COMPANY, Idlewild Hammock Mills, 19 PEARL ST., BOSTON, MASS.

THIS IS THE SEASON.

SELLS WHEN NOTHING ELSE WILL.

NOW IS THE TIME.

Ideal Sash Pulley, No. 55.



Adapted for auger socket or machine made mortise. Applied without chisel or screws, quickly and a perfect fit in every case. The only all round Sash Pulley made. Sample free. Price on application.

STOVER MFG. CO., 145 River St., Freeport, Ill.

SASH WEIGHTS

E. E. BROWN & CO., McKean and Meadow Sts., PHILADELPHIA, PA.

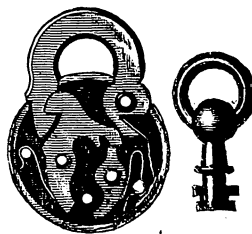
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Attracts attention and makes customers. The addition of a highly artistic Embossed Cover creates a good impression at first glance. Our business is to design and make catalogs complete, including engravings.

GRIFFITH, AXTELL & CADY CO. Holyoke, Mass.

Send six cents in stamps for our catalog "E," showing original Embossed Cover designs. DESIGNERS PRINTERS EMBOSSEERS

PATENT PERFECTION PADLOCK.



Eight Tumblers, Key Turning Both Ways.

Sizes, 1/4 inch to 2 1/4 inches, of cast bronze. Defies competition for quality and price. No steel or iron used, cannot rust, and cannot be picked. Also, 1/2 and 3/4 inch Padlocks, opened with a common pin, in brass and nickel, for cats and small dogs. The best Railroad Switch and Car Lock in the world.

Adopted by the United States Treasury for bonded warehouses.

AMES SWORD CO., Chicopee, Mass.

Send for Price-Lists and Circulars.

DOES IT PAY?

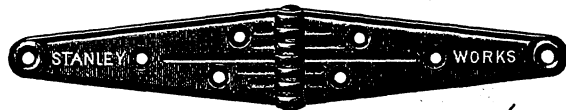
To buy an inferior article, which your trade condemns, when you can get

THE CALDWELL SASH BALANCE.

The best material, right principle and care in making and testing have made it the LEADER for five years. Write to

CALDWELL MFG. CO., Rochester, N. Y.

Corrugated Wrought Steel Hinges.



COST NO MORE } THAN THE OLD STYLE.
MUCH BETTER

Try them and be convinced. For sale by the leading Jobbers of

THE WORLD.

—MADE ONLY BY—

THE STANLEY WORKS, NEW BRITAIN, CONN. 79 CHAMBERS ST., N. Y.

STAR LOCK WORKS, PHILA.

W. & L. WOLF,

MANUF'RS OF

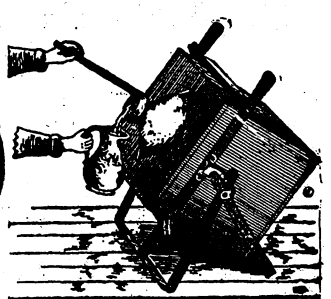
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AND

Spring Padlocks, Trunk & Case Locks,

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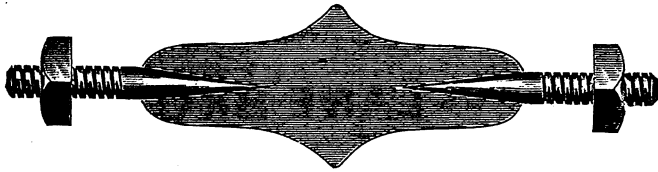


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Couplings, Clips, King Bolts, Fifth Wheels, &c.
SEND FOR SUPPLEMENT TO CATALOGUE,



Showing a full line of Axle Clips, Spring Bar Clips
and Three Piece Saddle Clips.

SEND FOR CATALOGUE AND SUPPLEMENT.

SASH WEIGHTS!

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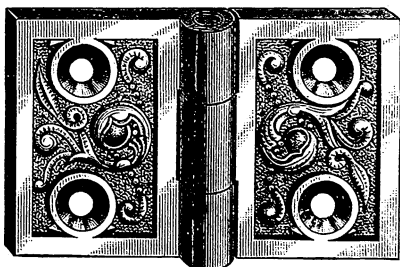
Manufacturers,

Office: 813 Masonic Temple, CHICAGO.

WORKS AT MAYWOOD, ILL.

READING & HARDWARE & COMPANY.

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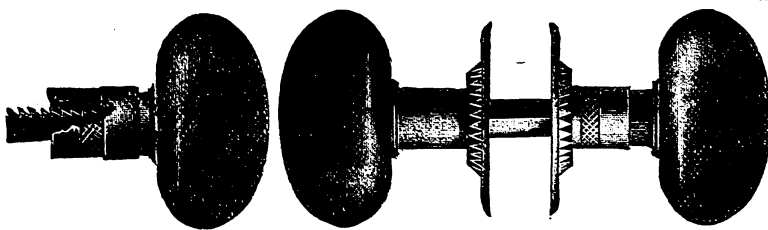
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New York, Philadelphia, Chicago.

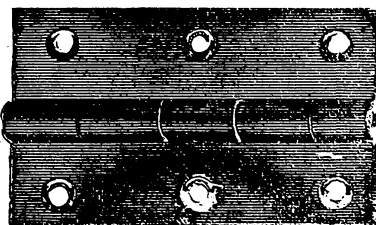
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Sectional cut showing construction of Knob.



Half size cut of knob as applied to door. No side screws or adjusting washers.

Don't you want your stock to represent the latest and most improved up to date Hardware? The Whipple Patent Door Knob is the latest and best Door Knob attachment ever made. Give it a trial. PERRY & WHIPPLE CO., New Haven, Conn.
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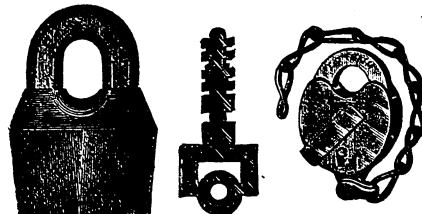
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ESTABLISHED 1879.
KEYSTONE LOCK WORKS.

E. T. FRAIM, Lancaster, Pa., U. S. A.



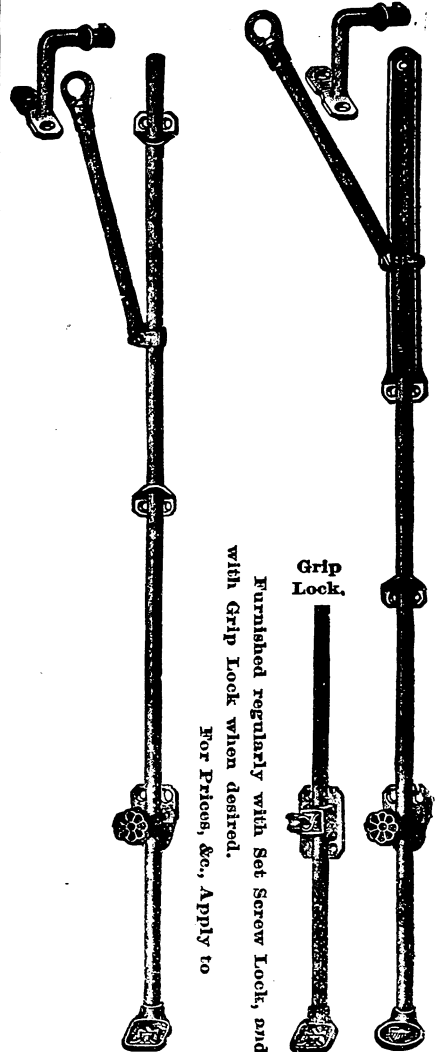
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"EAGLE."

"SHIELD."



Furnished regularly with Set Screw Lock, and with Grip Lock when desired.
For Prices, &c., Apply to

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MANUFACTURERS OF

A Full Line of Carriage Hardware

Bicycle and other Drop Forgings of every description made to order.
Estimates cheerfully given. Send for Catalogue.

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WE MAKE ONLY

The Very Highest Grade

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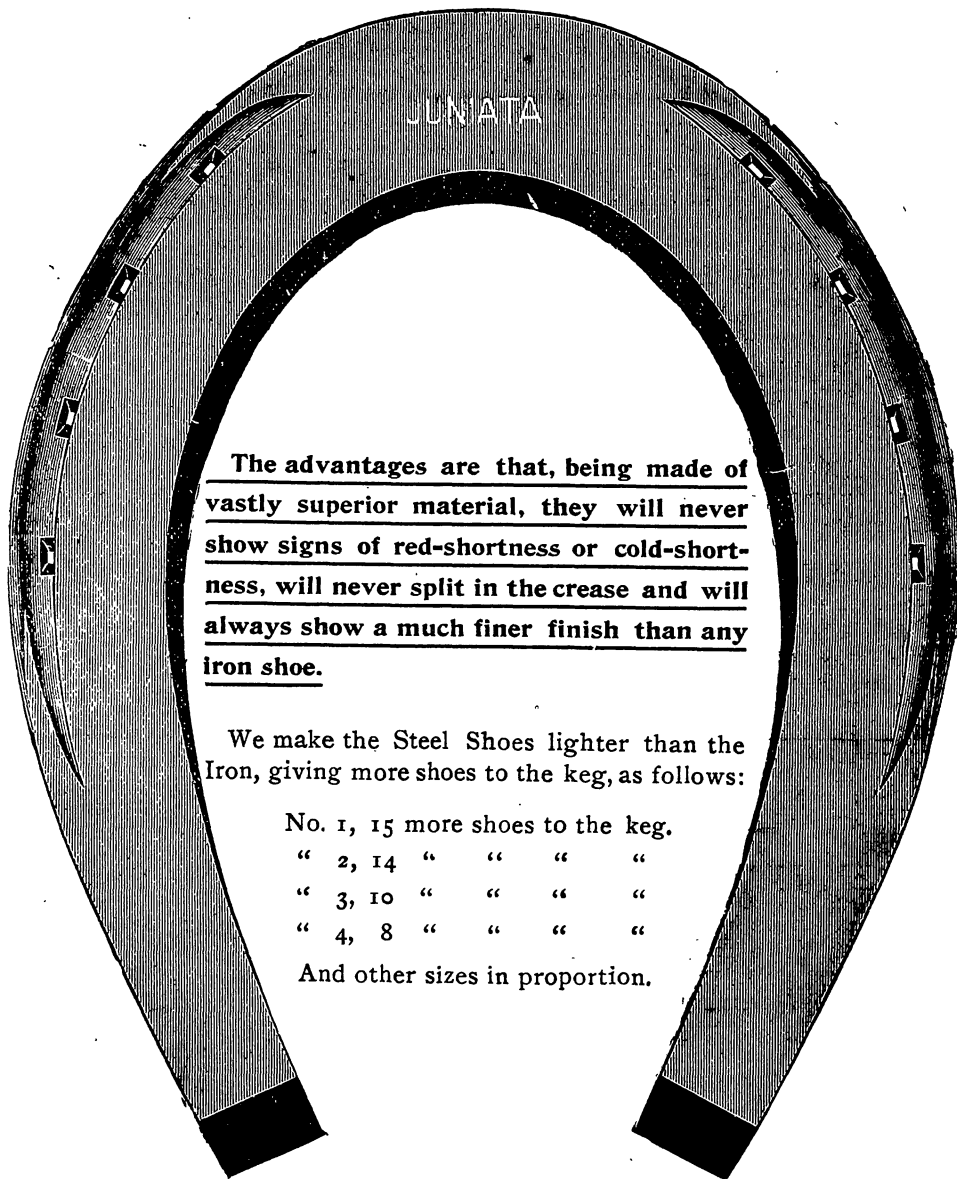
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SHOENBERGER & CO., PITTSBURGH, PA.,

After numerous and costly experiments have succeeded in manufacturing a special quality of soft homogeneous steel, specially adapted to the manufacture of Horse and Mule Shoes, and are now making from this steel Extra Swaged and Government Pattern Horse and Mule Shoes. They give the best of satisfaction everywhere and we furnish them to the trade at the same prices as the regular iron shoe sold by ourselves and our competitors. We are at present making our Roadster Pattern Horse Shoes out of Iron, but we will make them of Steel also within a short time.



The advantages are that, being made of vastly superior material, they will never show signs of red-shortness or cold-shortness, will never split in the crease and will always show a much finer finish than any iron shoe.

We make the Steel Shoes lighter than the Iron, giving more shoes to the keg, as follows:

No. 1, 15 more shoes to the keg.

" 2, 14 " " " "

" 3, 10 " " " "

" 4, 8 " " " "

And other sizes in proportion.

No. 2 EXTRA SWAGED FRONT.

We also beg to say that we have introduced improved machinery into our new factory and have doubled our capacity, and are now prepared to furnish the best shoe, either iron or steel, ever offered to the trade.

We would also call your attention to our Improved Steel Toe Calk, equal to any in the market. To secure the best wearing qualities use sand or borax in welding on a calk and cool off at a dark red, or still better, cool off without plunging in water. We make sizes numbers 1, 2, 3, 4, 5 and 6, packed in 25-pound boxes.

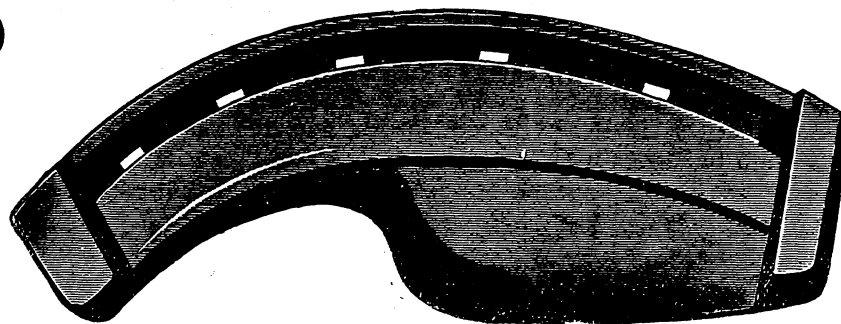
Write to us for information and prices, or apply to jobbers and dealers, who sell them everywhere.

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JUNIATA IRON AND STEEL WORKS, - - - PITTSBURGH, PA.

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CARRIAGE HARDWARE**SPECIAL DROP FORGINGS.****FORGED****OX****SHOES.**

Made under Deebie's Patent, Aug. 9, 1887.

Our 1891 pattern is a modification of the style we have made for the past four years, giving additional strength to the web.

IT IS JUST RIGHT.**HORSE AND MULE SHOES.**

Superior Quality, Shape and Finish.

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Horse and Mule Shoes of the Perkins Pattern.

SPECIALTIES — X L Steel Shoes, Toe Weight Shoes and Goodenough Shoes.

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Other "high grade" specialties in Rivets, Spikes, Splice Bars, Track and Machine Bolts, Blaud Nuts, Stay Bolt Iron, Horse Shoe Iron, Bar Iron, &c.

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BURDEN'S**HORSE SHOES.****"Burden Best"****Iron****Boiler Rivets.****The Burden Iron Co.****TROY, N. Y.****PHOENIX****HORSE SHOES.****PHOENIX HORSE SHOE CO.,**

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—AT—
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In the tests submitted before the judges on awards
the Capewell No. 6 was shown to be 17 per cent. tougher
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CAPEWELL HORSE NAILS,
MADE BY
THE CAPEWELL HORSE NAIL CO., - - - HARTFORD, CONN.

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October 28, 1893.

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Gentlemen—I have used your horse nails here on the horses belonging
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Very respectfully,
HERMAN J. HENKE,
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"The Best
Driving
Nail."

"The Best
Nail to
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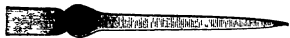
The
Capewell
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Corrugated
Horse Nail.

Needs
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At Centennial Exposition **HIGHEST AWARD** At World's Columbian Exposition
AT PHILADELPHIA. AT CHICAGO.

TO THE
PUTNAM
HOT-FORGED AND HAMMER-POINTED
HORSESHOE NAILS.

REGULAR HEADS for ordinary creased shoes.
CITY HEADS, or short heads for shallow creased shoes.
COUNTER HEADS for "Goodenough" shoes.
FRENCH HEADS for punched shoes, without creases.

These Nails are drawn from head to point from the **BEST SWEDISH IRON RODS** at a
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They are the best because they are made of the best iron, and by the only process in which the iron is treated
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Those who handle only the best goods hold the confidence of their customers.

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MANUFACTURERS OF THE BEST QUALITY

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MANUFACTURE THE LARGEST VARIETY OF

FORGED CARRIAGE IRONS

Of Best Material and Workmanship.

Send for Price and Illustrated List of

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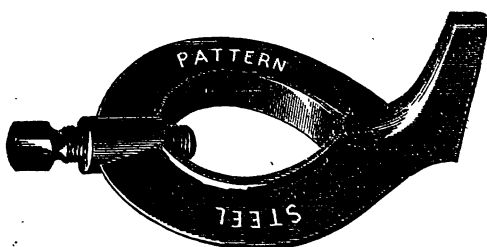
Manufactured by the NATIONAL HORSE NAIL CO.,
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All Sizes. All Patterns. All Warranted. Sold Everywhere.

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LE COUNT'S LIGHT STEEL DOG,

WITH STEEL SCREWS.



U. S. Standard.			Points Hardened.		
No.	Inch.	Price.	No.	Inch.	Price.
1.....	3/8.....	\$0 35	7.....	1 1/4.....	\$1 00
2.....	1/2.....	35	8.....	2.....	1 10
3.....	3/4.....	50	9.....	2 1/2.....	1 40
4.....	1.....	60	10.....	3.....	1 50
5.....	1 1/4.....	75	11.....	3 1/2.....	1 70
6.....	1 1/2.....	85	12.....	4.....	1 90

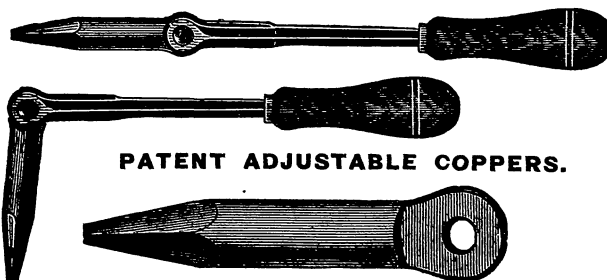
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Covert Pat. Adjustable Soldering Irons & Coppers

It is a complete tool in every respect, and can be as easily adjusted at angle while hot as cold. The handle can be used indefinitely, as when the copper is worn out it can be replaced in the same handle, making the iron as good as new at about half the cost of the ordinary soldering iron.



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A sample of 3/4 in. soldering iron will be sent by mail, free of postage to any address, on receipt of sixty cents (60c.).

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Manufacturers of
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BURKE'S IMPROVED
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Horse and Mule Shoes,
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CRESCENT HORSE SHOE
IRON CO.

Max Meadows, Va.

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Cut One-half Size.
Sample pair sent to any hardware or saddlery firm by addressing
The Frost Thill Spring Co.,
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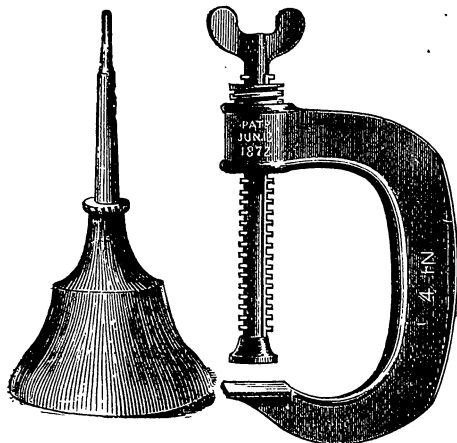
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New illustrated catalogue issued May 10th mailed on application.

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NEW pattern Heavy Screw Clamps.
Strongest in the market.



HAMMER'S MALLEABLE IRON OILERS, 3 Sizes.
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HAMMER'S ADJUSTABLE CLAMPS.

For sale by all the principal Hardware Dealers.
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MALLEABLE IRON CASTINGS
superior quality, and Hardware Specialties in
Malleable iron made to order.

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HARDWARE DEALERS

CAN RECOMMEND THE

CHAMPION METAL WINDOW SASH CHAINS

to their customers as a reliable substitute for
Sash Cords, very strong and lasting (some in
daily use ten years), and gives thorough satis-
faction wherever used. The patented attach-
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any window.

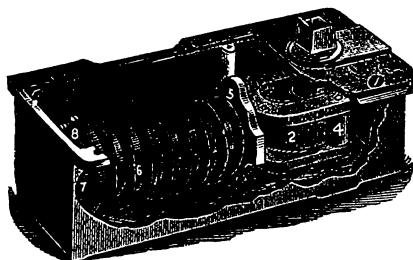
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Write for Prices.

NEW YORK.



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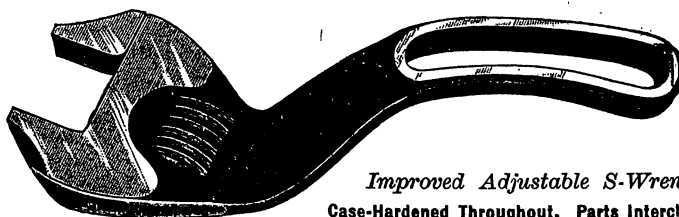
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Applied in floor under door. They close the door
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Improved Adjustable S-Wrench.
Case-Hardened Throughout. Parts Interchangeable.

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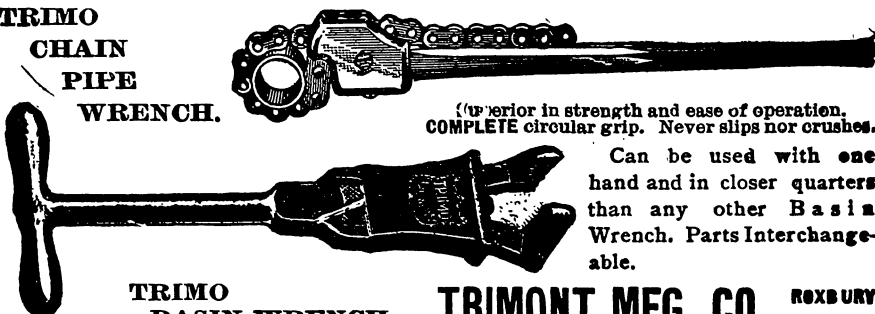
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Forged Steel.

All parts Interchangeable.

Grips firmly without loss of motion. Releases readily. Never locks. Causes no
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TRIMO CHAIN PIPE WRENCH.



Superior in strength and ease of operation.
COMPLETE circular grip. Never slips nor crushes.

Can be used with one
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Wrench. Parts Interchange-
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BASIN WRENCH.

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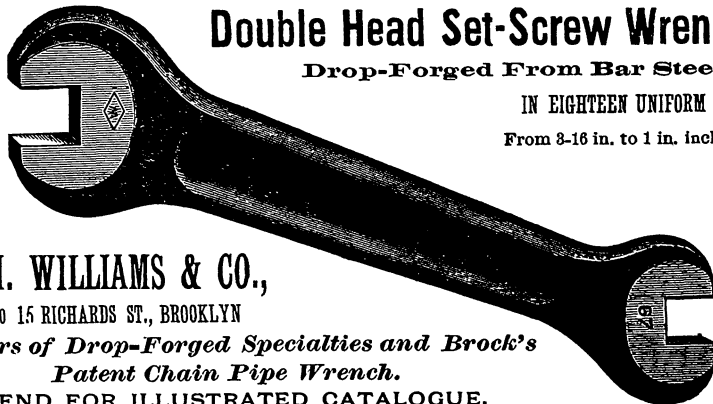
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Double Head Set-Screw Wrenches.

Drop-Forged From Bar Steel.

IN EIGHTEEN UNIFORM SIZES.

From 3-16 in. to 1 in. inclusive.



Lathe Dogs.
Keys.

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Makers of Drop-Forged Specialties and Brock's
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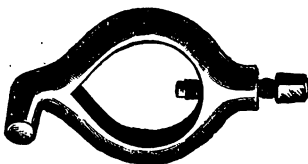
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Drop Forged from Best Bar Steel,
and warranted a first-class
article.

CLAMP AND DIE DOGS OF THE SAME HIGH QUALITY

THE BILLINGS & SPENCER CO. - - Hartford, Conn.

Drop Forgings of Every Description.

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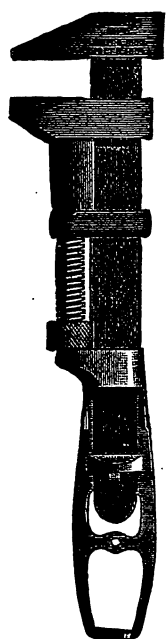
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Manufacturers of MACHINE KNIVES.

Shear Blades and Strips, Moulding Cutter Plate, Die Stock for Leather, Cloth and Paper Cutting Dies. Lawn Mower and Hay Cutter Knives of every description.

End view of Plated Stock for Dies, Lawn Mower Knives, Blades

Etc., showing how the Steel is laid.

**L. COES'**

Genuine Improved
**KNIFE HANDLE
PATENT**

**Screw
Wrenches**

MANUFACTURED BY
**COES WRENCH CO.,
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Established in
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Registered
March 31, 1874.

Patented July
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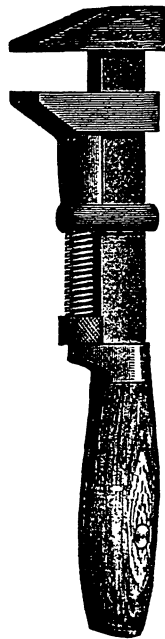
Patented July
8, 1884.

Sectional View Illustrates our New Knife Handle, showing Malleable Iron Frame and Shank of Bar keyed into position.

✓ Straight Bar, Extra Long Nut for Screw in Jaw. ✓

The BEST MADE and STRONGEST WRENCH in the MARKET.

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IMPROVED MINE LAMP
FOR ANTHRACITE AND
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MINING.

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DIFFERENT
STYLES
OF SPOUTS.

SAMPLE 15¢.

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SEAMLESS
BRASS
COLLAR
BRASS HINGE
Lid Solid
No SOLDERING

THE
"Columbia"
Trade-Mark.
**SOCKET
FORKS.**

Made in Hay,
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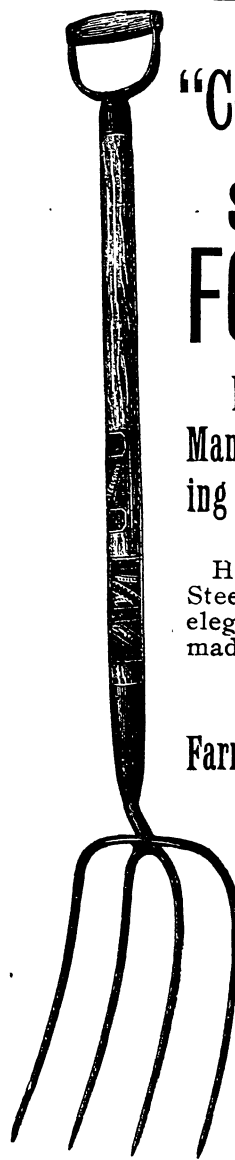
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Steel Socket. Most
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**The English and American Mechanic:**

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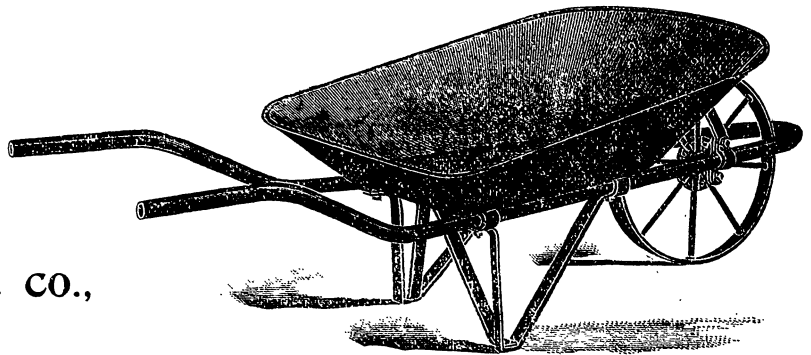
An Oft Told Tale.

But t'will bear repetition.

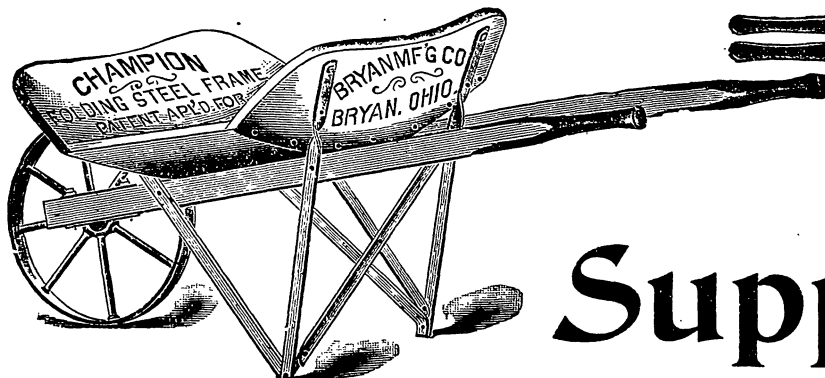
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of wheelbarrows in the world.

Our stock comprises the
greatest variety of styles and sizes,

And our productions are of
the best grade at prices to suit
the dealer. Write for Cat.



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KILBOURNE & JACOBS MFG. CO.,
Columbus, O., U. S. A.



KNOCKED DOWN!

Occupies Space
3 inches x 5 inches x 60 inches.

Suppose

The best's the cheapest

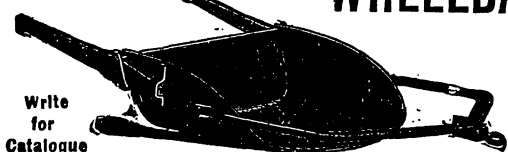
You had a good thing to sell.
We had a good thing to sell.
You bought what we had to sell.
You sold what we had to sell.
The customer thought it the best of all.
What would be the result of this supposition?
If you can't guess it and would like to know,
If you'll drop us a card we'll tell you.

ALL STEEL WHEELBARROWS & SCRAPERS

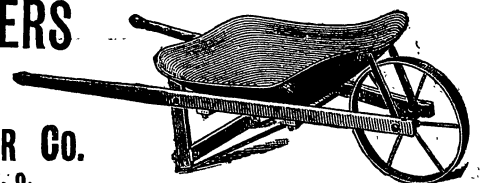
MANUFACTURED BY

AMERICAN STEEL SCRAPER CO.

104 Court Street, SIDNEY, O.

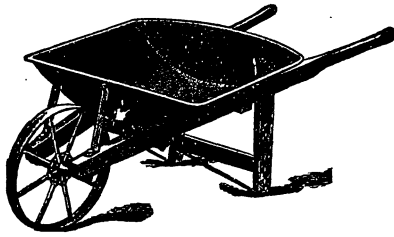


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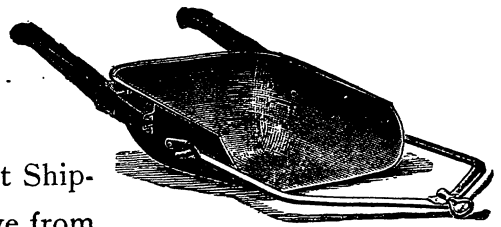
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PAN

Prices,



High Grade Goods, Prompt Ship-
ments are what you receive from
the

Sidney Steel Scraper Co., 924 Poplar Street,
SIDNEY, OHIO.

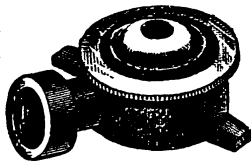


Japanese No. 12,
Adjust.

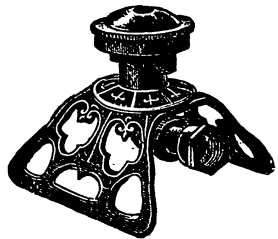
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We manufacture the BEST and
CHEAPEST Lawn Sprinklers in
the World.

Cactus No. 8.



The only Sprinklers which have no revolving parts to leak or wear out.
The only Sprinklers free from small holes, and which cannot become clogged with gritty substances.
The only Sprinklers which are adjustable and will give a spray as fine as the mist of Niagara, or as heavy as the area of the supply pipe.
The best Sprinklers for high pressures, and the only sprinklers which will give satisfaction with low pressures
We also manufacture the old style revolving sprinklers, but for our own use would not have them

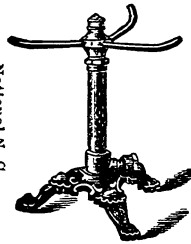


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Ette & Henger Mfg. Co.

ST. LOUIS, MO.

Nelson N. G.



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THE TEST OF 2 SEASONS

PROVES THE SUCCESS OF THE

LITTLE GIANT

Traveling Lawn Sprinkler.

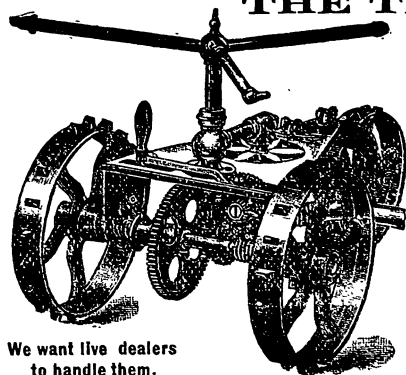
PATENTED.

Can be set to travel anywhere from 15 to 500 feet per
hour, either on a straight line or in a circle, and can be
gauged to throw water over a swath 5 to 50 ft. in width.
Highest Award at World's Columbian Exhibition.

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Portland Lawn Sprinkler Co.,

PORTLAND, ME.



We want live dealers
to handle them.

Hudson's Garden Hose Mender

So Simple a Child Can Use It.

Made in three sizes, for $\frac{1}{8}$ in., $\frac{3}{8}$ in. and 1 in. hose.

Put up in Boxes for Family use.

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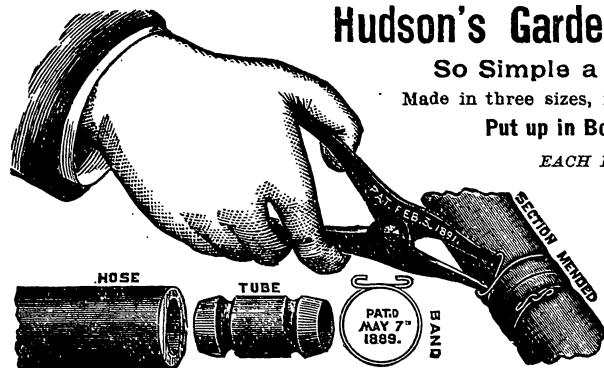
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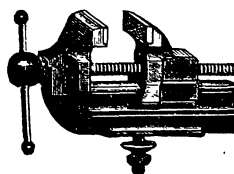
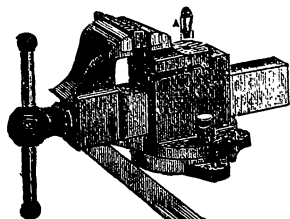
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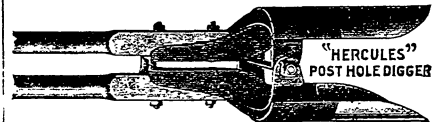
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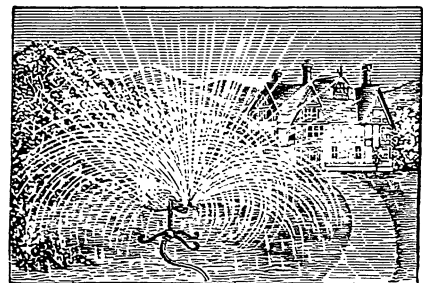
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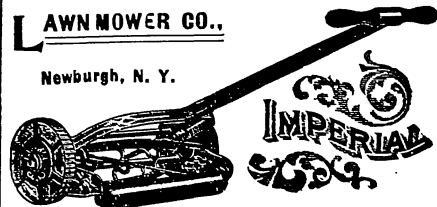
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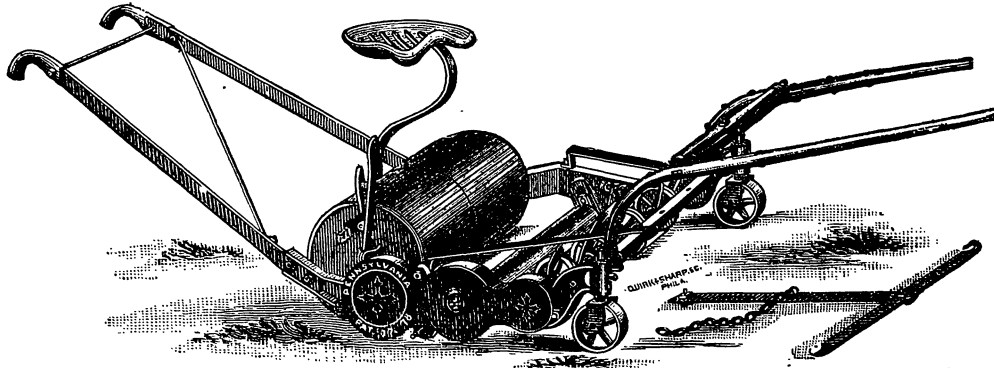
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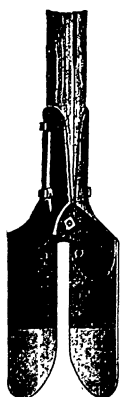
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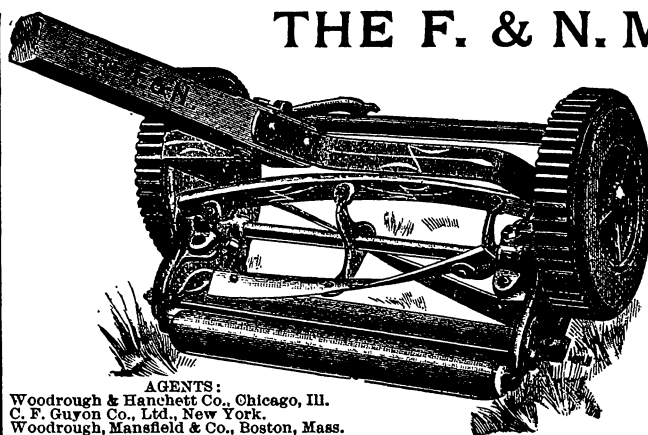
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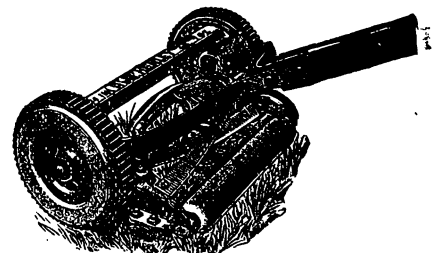
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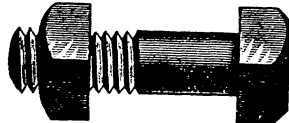
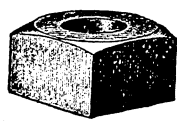
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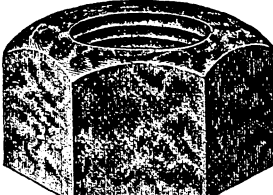
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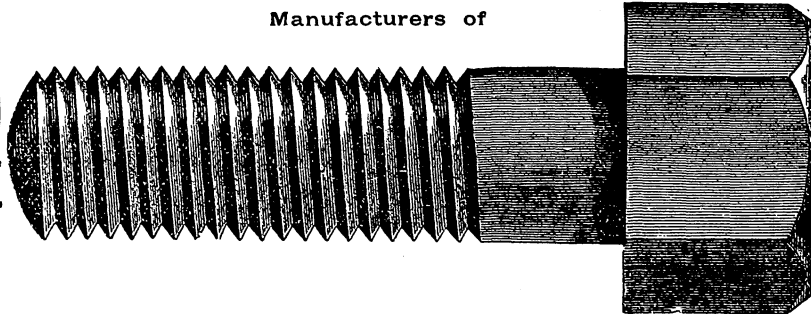
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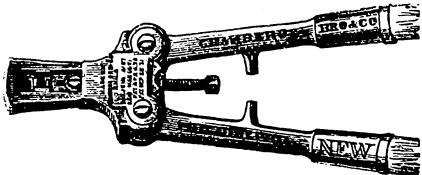
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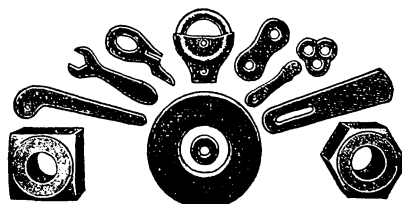
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Barns, C. K. & Co., Philadelphia, Pa.
Houston C. B. & Co., Philadelphia, Pa.
Rainey, W. J., Cleveland, O.
Wister, Francis, Philadelphia, Pa.

Collections.

Hardware Board of Trade (Limited),
4 and 6 Warren, N. Y.

Condensers.

Worthington, Henry R., 86 & 88 Liberty
Street, N. Y.

Conveying Machinery.

Brown Hoisting & Conveying Machine
Co., Cleveland, Ohio.
Jeffrey Mfg. Co., Columbus, O.
Link-Belt Engineering Co., Phila., Pa.

Copper.

Ames Sword Co., Chicopee, Mass.
Ansonia Brass & Copper Co., 19 and 21
Cliff, N. Y.
Hendricks Bros., 49 Cliff, N. Y.
New Haven Copper Co., 294 Pearl, N. Y.
Randolph & Clowes, Waterbury, Conn.
Rome Brass & Copper Co., Rome, N. Y.
Wister, Francis, Philadelphia, Pa.

Cordage.

Samson Cordage Works, Boston, Mass.

Cork Screws.

Williamson, C. T. Wire Novelty Co.,
Newark, N. J.

Corrugated Furnaces.

Continental Iron Wks., Brooklyn, N. Y.

Corrugated Iron.

Cincinnati Corrugating Co., Piqua, O.
Cambridge Roofing Co., Cambridge.
Jersey City Galvanizing Co., 112 John
St., N. Y.
Moseley Iron Bridge & Roof Co., 5 Day,
N. Y.
N. Y. Iron Roofing & Corrugating Co.,
Jersey City, N. J.

Counting Machines.

Durant, W. N., Milwaukee, Wis.

Cranes.

Detroit Foundry Equipment Co., De-
troit, Mich.
Halsey, W. S. & Co., Birdsboro, Pa.
Maris & Beekley, Philadelphia, Pa.
Ridgway, Craig & Sons, Coatesville,
Pa.
Sellers, Wm. & Co., Inc., Phila., Pa.
Yale & Towne Mfg. Co., Stamford,
Conn.

Cupolas, Hot Blast.

Detroit Foundry Equipment Co., De-
troit, Mich.

Curry Combs.

Gibbs Mfg. Co., Canton, O.

Cutlery, Importers of.

Sickles, Sweet & Lyon, 35 Barclay, N. Y.

Cutlery, Manufacturers of.

Bingham, W. Co., Cleveland, Ohio.
Dane, Stoddard & Kendall, Boston,
Mass.
Goodell Co., Antrim, N. H.
Northampton Cutlery Co., Northamp-
ton, Mass.
Wilson, John, Sheffield, England.

Cutlery Display Cases.

Union Show Case Co., Chicago, Ill.

Cyclometers.

Bridgeport Gun Implement Co., 313-
315 Broadway, N. Y.

Dampers.

Arcade Mfg. Co., Freeport, Ill.

Dies.

Wilson, J. Fred, Worcester, Mass.

Die Forgings and Castings.

Bliss, E. W. Co., Brooklyn, N. Y.

Door Checks and Springs.

Bardsley, J., 149 & 151 Baxter St., N. Y.

Door Knobs.

Perry & Whipple Co., New Haven, Ct.

Door Springs.

Coiled Wire Belting Co., Jersey City,
N. J.

Drilling Machines.

Bickford Drill & Tool Co., Cin., Ohio.
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lan-
caster, Pa.
Colburn, A. M., New Haven, Conn.
Dallett, Thos. H. & Co., Philadelphia.
Dietz, Schumacher & Co., Cincinnati,
Ohio.
Dwight Slate Machine Co., Hartford,
Conn.
Goddard, Asa, Worcester, Mass.
Halsey, Jas. T., Philadelphia, Pa.
Hamilton Mch. Tool Co., Hamilton, O.
Fenn, Diamond Drill & Mfg. Co.,
Birdsboro, Pa.
Quint, A. D., Hartford, Conn.
Sellers, Wm. & Co., Inc., Phila., Pa.
Sigourney Tool Co., Hartford, Conn.
Silver Mfg. Co., Salem, O.
Wiley & Russell Mfg. Co., Greenfield,
Mass.

Drop Forgings.

Billings & Spencer Co., Hartford, Conn.
Boone, W. C. Mfg. Co., Boonton, N. J.
Clapp, E. D. Mfg. Co., Auburn, N. Y.
Eccles, Richard, Auburn, N. Y.
Merrill Bros., Brooklyn, E. D.
Miner & Peck Mfg. Co., New Haven, Ct.
Phila. Drop Forge Co., Phila., Pa.
Scranton Forging Co., Scranton, Pa.
Wilcox & Howe Co., Birmingham,
Conn.
Williams, J. H. & Co., Brooklyn, N. Y.
Wilmot & Hobbs Mfg. Co., Bridgeport,
Conn.
Wyman & Gordon, Worcester, Mass.

Drop Presses.

Bliss, E. W. Co., Brooklyn, N. Y.
Crosby, G. A. & Co., Chicago, Ill.
Miner & Peck Mfg. Co., New Haven,
Conn.
Stiles & Parker Press Co., Brooklyn,
N. Y.
Vulcan Iron Works, Chicago, Ill.
Waterbury Farrel Foundry and Ma-
chine Co., Waterbury, Conn.

Dumb Waiters.

Hutchinson, F. S. Co., 32 Warren Street,
N. Y.
Storm Mfg. Co., Newark, N. J.

Dynamite.

New York Powder Co., 62 Liberty St.,
N. Y.

Dynos.

C. & C. Electric Co., 402 and 404
Greenwich St., N. Y.

Egg Beaters.

North Bros. Mfg. Co., Philadelphia, Pa.

Electric Bells and Supplies.

Ostrander, W. R. & Co., 204 Fulton St., New York.
Wollensak, J. F., Chicago, Ill.

Elevators, Makers of.

Link-Belt Engineering Co., Phila., Pa.
Morse, Williams & Co., Phila., Pa.
Penna. Elevator Engineering Co., Phila., Pa.

Emery and Emery Wheels.

N. Y. Belting & Packing Co., Ltd., N. Y.
Northampton Emery Wheel Co., Leeds, Mass.
Norton Emery Wheel Co., Worcester, Mass.
Sterling Emery Wheel Co., 174 Fulton St., N. Y.
Sturtevant Mill Co., Boston, Mass.

Emery Wheel Dressers.

Bay State Stamping Co., Worcester, Mass.

Engineers and Contractors.

Aiken, Henry, Pittsburgh, Pa.
Artificial Gas Engineering Co., Pittsburgh, Pa.
Herrick, J. A., 284 Pearl St., N. Y.
Kennedy, Julian, Pittsburgh, Pa.
Laughlin, Alex. & Co., Pittsburgh, Pa.
Lean, D. R. Co., Pittsburgh, Pa.
McClure, Amster & Co., Pittsburgh, Pa.
Pittsburgh Iron & Steel Engineering Co., Pittsburgh, Pa.
Smythe, S. R. Co., Incorporated, Pittsburgh, Pa.
Swindell, W. & Bro., Pittsburgh, Pa.

Engines, Gas and Gasoline.

Buckeye Mfg. Co., Union City, Ind.
Otto Gas Engine Works, Phila., Pa.
Rollason Gas Engine, Havemayer Bldg., N. Y.
Springfield Gas Engine Co., Springfield, Ohio.

Engines, Steam, Makers of.

Bass Foundry & Machine Works, Ft. Wayne, Ind.
Norwalk Iron Works Co., So. Norwalk, Conn.
Penna. Diamond Drill & Mfg. Co., Birdsboro, Pa.
Phila. Engineering Works, Phila., Pa.
Southwick Foundry & Machine Co., Phila., Pa.
Tod, William & Co., Youngstown, O.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.
Wetherill, Robt. & Co., Chester, Pa.

Exhaust Tumblers.

Sweetser, W. A., Brockton, Mass.

Expansion Bolts.

Boone, W. C. Mfg. Co., Boonton, N. J.
Church, Isaac, Toledo, O.
Steward & Romaine Mfg. Co., Phila., Pa.

Exporters.

Flint & Co., 68 Broad St., N. Y.

Faucets, Self-Measuring.

Lane Bros., Poughkeepsie, N. Y.

Faucets, Wooden, Makers of.

John Sommer's Son, Newark, N. J.

Feed-Water Heaters and Purifiers.

Davis, I. B. & Son, Hartford, Conn.
Goubert Mfg. Co., 32 Cortlandt St., N. Y.
Harrison Safety Boiler Works, Phila., Pa.
National Pipe Bending Co., New Haven, Conn.
Taunton Locomotive Mfg. Co., Taunton, Mass.
Webster, Warren & Co., Camden, N. J.
Whitlock Coil Pipe Co., Elmwood, Conn.

Fencing, Iron and Wire.

Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Clinton Wire Cloth Co., Clinton, Mass.
Elbert & Bennett Mfg. Co., 42 Cliff St.
Kilmer Mfg. Co., Newburgh, N. Y.
Randall Fence Co., Le Roy, N. Y.
The Van Dorn Iron Works Co., Cleveland, O.

Files, Importers of.

Moss, F. W., 80 John St., N. Y.

Files and Rasps, Manufacturers of.

Arcade File Works, Anderson, Ind.
Banker & White, Troy, N. Y.
Barnett, G. & H., 41 & 43 Richmond, Phila.
McCaffrey File Co., Philadelphia.
Nicholson File Co., Providence, R. I.

Fire Brick, Makers of.

Borgner, Cyrus, Philadelphia, Pa.
Gardner, Jas. & Son, Cumberland, Md.
Kreischer, B. & Sons, foot E. Houston St., N. Y.
Maurer, H. & Son, 420 E. 23d, N. Y.
Ostrander Fire Brick Co., Troy, N. Y.
Valentine, M. D. & Bro. Co., Woodbridge.

Fire Doors.

Coburn Trolley Track Mfg. Co., Holyoke, Mass.

Fishing Tackle.

Dame, Stoddard & Kendall, Boston, Mass.

Flint and Emery Paper.

Baeder, Adamson & Co., Phila., Pa.

Flour Sifters.

Bromwell Brush & Wire Goods Co., Cincinnati, Ohio.

Flue Cleaners.

Mackey, Jas. T., St. Louis, Mo.

Fodder Cutters.

Silver Mfg. Co., Salem, O.

Forges, Portable, &c.

Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Sturtevant, B. F. Co., Boston, Mass.

Forgings, Iron and Steel.

Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Steel-Cambria Iron Co., Johnstown, Pa.
Frankford Steel Co., Phila., Pa.
Scranton Forging Co., Scranton, Pa.
U. S. Projectile Co., Brooklyn, N. Y.

Forks, Hay and Manure.

Iowa Farming Tool Co., Ft. Madison, Iowa

Foundry Facings.

Dixon, Jos., Crucible Co., Jersey City, N. J.
S. Obermayer Co., Cincinnati, O.
Smith, J. D., Fdy. Supply Co., Cinn., O.

Foundry Riddles.

Estey, W. S., 65 Fulton, N. Y.

Foundry Supplies.

Diamond Clamp & Flask Co., Richmond, Ind.
S. Obermayer Co., Cincinnati, O.
Rice Mfg. Co., New Durham, N. H.
Smith, J. D., Fdy. Supply Co., Cinn., O.

Friction Clutches.

Brown, A. & F., 17 Dey St., N. Y.
Keystone Clutch & Mch. Wks., Phila., Pa.
Moore & White Co., Philadelphia, Pa.

Friction Cone.

Evans Friction Cone Co., Boston, Mass.

Galvanizing Kettles.

Sands, Thos., Nashua, N. H.

Galvanized Material.

Jersey City Galvanizing Co., 112 John St., N. Y.

Gas Producers.

Wood, R. D. & Co., Philadelphia, Pa.

Gas & Steam Fitters' Supplies.

Pancoast, Henry B. & Co., Phila., Pa.

Gate Hinges.

Wrightsville Hdwr. Co., Wrightsville, Pa.

Gauge, Rolling Mill.

Haines Gauge Co., Philadelphia, Pa.

Gear Cutters.

D. E. Whiton Mach. Co., New London, Conn.

Gears.

Boston Gear Works, Boston, Mass.
Gleason Tool Co., Rochester, N. Y.
Lincoln Iron Works, Rutland, Vt.
Poole, Robt. & Son Co., Baltimore, Md.
U. S. Projectile Co., Brooklyn, N. Y.

Glass Boards.

Lufkin Rule Co., Saginaw, Mich.

Glass Cutters.

Monce, S. G., Bristol, Conn.

Glue.

Baeder, Adamson & Co., Phila., Pa.
Dodd, A. W. & Co., Gloucester, Mass.
Russia Cement Co., Gloucester, Mass.

Grass Catchers.

Supple Hardware Co., Phila., Pa.

Grinding and Polishing Machines.

Norton Emery Wheel Co., Worcester, Mass.

Grindstone Dressing Machinery.

Blake & Johnson, Waterbury, Conn.

Grindstones.

Cleveland Stove Co., Cleveland, O.

Gunpowder, Makers of.

Lafin & Rand Powder Co., 29 Murray St., N. Y.

Hammocks.

Eustis, Jas. W. Co., Boston, Mass.

Handles.

Cleveland Wood Turning Co., Cleveland, O.

Hangers, Door.

Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Lane Bros., Poughkeepsie, N. Y.

Hardware Comm'n Merchants.

Graham, John H. & Co., 111 Chambers St., New York.
Jacobus, W. H., 90 Chambers, N. Y.

Hardware Manufacturers.

Stearns, E. C. & Co., Syracuse, N. Y.
Streeter, N. R. & Co., Groton, N. Y.
Union Mfg. Co., 103 Chambers, N. Y.
Yale & Towne Mfg. Co., Stamford Conn.

Hardware Mfrs.' Agents.

Bingham, W. Co., Cleveland, O.
Clarke, Thomas, St. John, N. B.
Graham, John H. & Co., 113 Chambers.
Sickles, Sweet & Lyon, 35 Barclay, N. Y.

Hardware Specialties.

Adams Shear Co., Bridgeport, Conn.
Berger Bros., Philadelphia, Pa.
Bourke Mfg. Co., Youngstown, O.
Enterprise Mfg. Co., Philadelphia, Pa.
Ette & Henger Mfg. Co., St. Louis, Mo.
Haines & Zimmerman, Phila., Pa.
Johnson, S. C., Racine, Wis.
New Britain Hdwr. Mfg. Co., New Britain, Conn.

North Bros. Mfg. Co., Philadelphia, Pa.
Ransom Hdwr. Co., Burlington, Vt.
Scranton & Co., New Haven, Conn.
Shepard, Sidney & Co., Buffalo, N. Y.
Wilson, J. Fred., Worcester, Mass.
Wrightsville Hdwr. Co., Wrightsville, Pa.

Harness Snaps.

Covert Mfg. Co., West Troy, N. Y.
Coverts' Saddlery Wks., Farmer, N. Y.
Fitch, W. & E. T., New Haven, Conn.

Hoisting Machines.

Box, Alfred & Co., 314 Green, Phila.
Brown Hoisting & Conveying Mch. Co., Cleveland, Ohio.
Fulton Iron & Engine Wks., Detroit, Mich.

Harrington, E. Son & Co., Phila.
Lane Bros., Poughkeepsie, N. Y.
Lidgerwood Mfg. Co., 96 Liberty, N. Y.
Lincoln Iron Works, Rutland, Vt.
McCoy, Jos. F. & Co., 26 Warren St.
Maris & Beekley, Philadelphia.
Moore Mfg. & Fdy. Co., Milwaukee, Wis.
Morse, Williams & Co., Phila.
Sellers, Wm. & Co., Phila. and N. Y.
Speidel, J. G., Reading, Pa.
Yale & Towne Mfg. Co., Stamford, Ct.

Hollow Ware.

Avery Stamping Co., Cleveland, O.
Bronson Supply Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.

Hollow Ware, Aluminum.

Wohler Aluminum Co., Chicago, Ill.

Horse Nails, Makers of.

Capewell Horse Nail Co., Hartford, Conn.
National Horse Nail Co., Vergennes, Vt.
Putnam Nail Co., Neponset, Boston, Mass.

Horse and Mule Shoes, Makers of.

Bryden Horse Shoe Co., Catsauqua, Pa.
Burden Iron Co., Troy, N. Y.
Crescent Horse Shoe & Iron Co., Max Meadows, Va.
Diamond State Iron Co., Wilmington, Del.
Old Dominion Iron & Nail Works Co., Richmond, Va.
Phoenix Horse Shoe Co., Poughkeepsie, N. Y.
Rhode Island Perkins Horse Shoe Co., Providence.
Shoenberger & Co., Pittsburgh, Pa.
Standard Horse Shoe Co., Boston, Mass.

Hose Menders.

Hudson, C. E. & Co., Leominster, Mass.

Hose.

N. Y. Belting & Packing Co., Ltd., 15 Park Row, N. Y.

Hydrants, &c.

McLean, John, 296 & 298 Monroe, N. Y.

Hydraulic Forging.

U. S. Projectile Co., Brooklyn, N. Y.

Hydraulic Jacks.

Dudgeon, Richard, 24 Columbia, N. Y.
McCoy, Jos. F. Co., 26 Warren St., N. Y.

Ice Cream Freezers.

North Bros. Mfg. Co., Phila., Pa.
Packer, C. W., Philadelphia, Pa.
White Mountain Freezer Co., Nashua, N. H.

Injectors.

Eynon-Evans Mfg. Co., Philadelphia, Pa.
Jenkins Bros., New York.

Insurance, Boiler.

Hartford Steam Boiler Inspection & Insurance Co., Hartford, Conn.

Iron and Steel, Swedish.

Lundberg, Gustaf, Boston, Mass.
Milne, A. & Co., 1 Broadway, N. Y.

Iron Commission Brokers.

Butze, Adolph, St. Louis, Mo.
Corning, Edw. & Co., 29 B'way, N. Y.
Cotton, Barclay W. & Co., Phila.
Etting, Edw. J., Philadelphia.
Hogan, John L. & Co., Philadelphia, Pa.
Hoffman, J. W. & Co., Philadelphia.
Levis, Henry & Co., Philadelphia.
Keeley, Jerome & Co., Philadelphia.
Lea, J. Tatum & Co., Philadelphia.
Mohr, J. J., 430 Walnut, Philadelphia.
Pilling & Crane, Philadelphia, Pa.
Wister, L. & R. & Co., Phila., Pa.

Iron Ore.

Samuel, Frank, Philadelphia, Pa.

Iron, Merchants.

Barnes, C. K. & Co., Philadelphia, Pa.
Borden & Lovell, 70 West, N. Y.
Bussenius & Cunliffe, Philadelphia.
Corning, Edw. & Co., 29 B'way, N. Y.
Cox, Justice, Jr., Philadelphia.
Cotton, Barclay W. & Co., Phila.
Hoffman, J. W. & Co., Philadelphia.
Leonard, J., 446 West St., N. Y.
Nicolls, Wheeler & Co., Philadelphia.
Ogden & Wallace, 677 to 683 Greenwich St., N. Y.
Pierson & Co., 29 Broadway, N. Y.
Thomson, W. H. & Co., Phila., Pa.
Wallace, Wm. H. & Co., 66 B'way, N. Y.
Whitney, R. & Co., 17 B'way, N. Y.
Wilson, E. H. & Co., Philadelphia.

Iron, Importers.

Abbott, Wheelock & Co., N. Y. and Boston.
Lundberg, Gustaf, Boston, Mass.

Iron, Sheet, Manufacturers of.

Cambridge Iron & Steel Co., Cambridge, Ohio.
W. Dewees Wood Co., Ltd., McKeesport, Pa.

Ironwork, Ornamental.

Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Ludlow-Saylor Wire Co., St. Louis, Mo.
The Van Dorn Iron Works Co., Cleveland, O.

Keys.

Wollensak, J. F., Chicago, Ill.

Knife and Tool Grinders.

Tracy, A. J. Co., Ltd., 18 Cliff St., N. Y.

Ladles.

Detroit Fdy. Equipment Co., Detroit, Mich.

Lanterns.

Rochester Lamp Co., 42 Park Place, New York.
Steam Gauge & Lantern Co., Syracuse, N. Y.

Lathes.

Dietz, Schumacher & Co., Cincinnati, O.
Draper Machine Tool Co., Worcester, Mass.
Harrington, E. Son & Co., Phila., Pa.
Johnson, Israel H., Jr., & Co., Philadelphia, Pa.
New Haven Mfg. Co., New Haven, Conn.
Sebastian Lathe Co., Cincinnati, O.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Lathing, Wire.

Clinton Wire Cloth Co., Clinton, Mass.
N. J. Wire Cloth Co., Trenton, N. J.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Lawn Mowers.

Blair Mfg. Co., Springfield, Mass.
Chadborn & Coldwell Mfg. Co., Newburg, N. Y.
Coldwell Lawn Mower Co., Newburg, N. Y.
Dille & McGuire Mfg. Co., Richmond, Ind.
Enterprise Mfg. Co., Philadelphia, Pa.
F. & N. Mfg. Co., Richmond, Ind.
Henley, M. C., Richmond, Ind.
Supplee Hdwr. Co., Phila., Pa.

Lawn Rakes.

Gibbs Mfg. Co., Canton, Ohio.
Kohler, F. E. & Co., Canton, O.

Lawn Sprinklers.

Blair Mfg. Co., Springfield, Mass.
Enterprise Mfg. Co., Phila., Pa.
Ette & Henger Mfg. Co., St. Louis, Mo.
Gibbs Mfg. Co., Canton, Ohio.
Graham, John H. & Co., 113 Chambers Street, N. Y.
McGowan, John H. Co., Cincinnati, O.
Portland Lawn Sprinkler Co., Portland, Me.

Lemon Squeezers.

Ripley Mfg. Co., Unionville, Conn.

Letters and Figures, Metallic.

White, A. A. & Co., Providence, R. I.

Letters, Paper.

Tablet & Ticket Co., Chicago, Ill.

Levels.

Richardson, C. F. & Son, Athol, Mass.

Locks and Knobs, Manufacturers of.

Deitz, A. E., 97 Chambers, N. Y.
Independent Electric Co., Chicago, Ill.
Reading Hdwr. Co., Reading, Pa.
Smith & Egge Mfg. Co., Bridgeport, Conn.
Yale & Towne Mfg. Co., Stamford, Conn.

Lubricants.

Dixon, Jos., Crucible Co., Jersey City, N. J.

Machinery.

Am. Tool Works, Cleveland, Ohio.
Ayer, H. C. & Gleason Co., Phila., Pa.
Barnes, W. F. & John, Rockford, Ill.
Bement, Miles & Co., Philadelphia, Pa.
Bigelow, C. E., 45 Dey, N. Y.
Bignall & Keeler Mfg. Co., St. Louis.
Bliss, E. W. Co., Brooklyn, N. Y.
Bridgeport Mch. Tool Works, Bridgeport, Conn.
Briggs, Marvin, 12 Broadway, N. Y.
Carlin's Sons, Thos., Allegheny, Pa.
Clapp, Geo. M., agt., 74 Cortlandt, N. Y.
Detrick & Harvey Mch. Co., Baltimore, Md.
Dietz, Schumacher & Co., Cincinnati, Ohio.
Fitchburg Mch. Works, Fitchburg, Mass.
Garvin Mch. Co., Laight & Canal Sts.
Gould & Eberhardt, Newark, N. J.
Hamilton Mch. Tool Co., Hamilton, O.
Harrington, E. Son & Co., Phila., Pa.
Henderer, A. L., Wilmington, Del.
Hendey Machine Co., Torrington, Ct.
Hill, Clarke & Co., Boston, Mass.
Howard & Morse, 45 Fulton St., N. Y.
Hubbott-Rogers Mch. Co., South Sudbury, Mass.
Johnson, Israel H., Jr., & Co., Phila.
Jones & Lamson Mch. Co., Springfield, Vt.
Lodge & Davis Mch. Tool Co., Cincinnati, O.
Lodge & Shipley Mch. Tool Co., Cincinnati, O.
Lovegrove & Co., Philadelphia, Pa.
McCabe, J. J., 68 Cortlandt, N. Y.
Machinery Supply Co., Rochester, N. Y.
Manville, E. J., Mch. Co., Waterbury Conn.
Newark Mch. Tool Wks., Newark, N. J.
New Haven Mfg. Co., New Haven, Ct.
New York Machinery Depot, 178 Broadway, New York.
Niles Tool Wks., 138 Liberty St., N. Y.
Pittsburgh Mfg. Co., Pittsburgh, Pa.

- Place, Geo.**, 145 Broadway, N. Y.
Poole, Robt. & Son Co., Baltimore, Md.
Powell Planer Co., Worcester, Mass.
Pratt & Whitney Co., Hartford, Conn.
Prentiss Tool & Supply Co., N. Y.
Scranton Supply & Mchry. Co., Scranton, Pa.
Sellers, Wm. & Co., Phila.
Seyfer's Sons, L. F., Philadelphia, Pa.
Signourney Tool Co., Hartford, Conn.
Stepoe, J. & Co., Cincinnati, O.
Stow Flexible Shaft Co., Ltd., Phila.
Toomey, Frank, Philadelphia, Pa.
Walker Mfg. Co., Cleveland, O.
Wetherill, Robert & Co., Chester, Pa.
Wickes Bros., Saginaw, Mich.
Wilson, W. A., Rochester, N. Y.
- Machinery for Hardware Manufacturers.**
Att. Jno. & Son, New Haven, Conn.
- Machine Knives.**
Loring, Coes & Co., Worcester, Mass.
Simonds Mfg. Co., Fitchburg, Mass.
New Britain Hdw. Mfg. Co., New Britain, Conn.
- Machine Screws.**
New Britain Hdw. Mfg. Co., New Britain, Conn.
- Machine Tools.—See Machinery.**
- Machine Work.**
Papping, J., 58th St. & 11th Ave., N. Y. City.
- Machinists' Scales.**
Coffin & Leighton, Syracuse, N. Y.
Starrett, L. S., Athol, Mass.
- Machinists' Tools and Supplies.**
King, J. M. & Co., Watford, N. Y.
Sellers, Wm. & Co., Inc., Phila.
- Manufacturing Sites.**
Illinois Central R. R., Chicago, Ill.
- Measuring Tapes.**
Keuffel & Esser Co., N. Y.
Larkin Rule Co., Saginaw, Mich.
- Meat Choppers.**
Clauss Shear Co., Fremont, Ohio.
- Mechanical Instruction.**
Correspondence School of Mechanics, Scranton, Pa.
- Metals.**
Fearing, Wm. S., 100 Chambers, N. Y.
Hendricks Bros., 49 Cliff, N. Y.
- Metal Brokers.**
American Metal Co., N. Y.
- Metallurgists.**
Britton, J. Blodgett, Phila., Pa.
- Mincing Knives.**
Palmer Hdw. Mfg. Co., Troy, N. Y.
- Mine Lamps.**
Darby, Edw. & Sons, Phila., Pa.
Leonard, B. E., Scranton, Pa.
- Mining Screens.**
Harrington & King Perforating Co., Chicago, Ill.
Howard & Morse, 45 Fulton, N. Y.
- Models, Makers of.**
Franklin, H. H. Mfg. Co., Syracuse, N. Y.
Ideal Machine Works, Hartford, Conn.
- Molding Sand.**
Obermayer, S. Co., Cincinnati, O.
- Money Drawers.**
Columbian Novelty Co., North East, Penna.
- Motors, Water and Electric.**
Boligano Mfg. Co., Baltimore, Md.
C. & C. Electric Co., 402 and 404 Greenwich St., N. Y.
Dallett, Thomas H. & Co., Phila., Pa.
- Nail Machinery.**
Pittsburgh Mfg. Co., Pittsburgh, Pa.
- Nail and Tack Pullers.**
Scranton & Co., New Haven, Conn.
Specialty Mfg. Co., Hartford, Conn.
- Nails (Cut) and Spikes.**
Borden & Lovell, 70 West, N. Y.
Pottstown Iron Co., Pottstown, Pa.
Riverside Iron Wks., Wheeling, W. Va.
- Nickel Plating.**
Rhodes, L. E. Co., Hartford, Conn.
- Norway Shapes, Rollers of.**
Rowland, William & Harvey, Frankford, Philadelphia.
- Novelty Manufacturers.**
Franklin, H. H. Mfg., Syracuse, N. Y.
Ideal Machine Works, Hartford, Conn.
- Nut Machines.**
Dunham Nut Co., Unionville, Ct.
- Nuts, Bolts, &c., Makers of.**
American Bolt Co., Lowell, Mass.
American Screw Co., Providence, R. I.
Blake & Johnson, Waterbury, Conn.
Dunham Nut Co., Unionville, Conn.
Haskell, Wm. H. Co., Pawtucket, R. I.
Mt. Carmel Bolt Co., Mt. Carmel, Conn.
Pennsylvania Bolt & Nut Co., Lebanon, Pa.
Port Chester Bolt & Nut Co., Port Chester, N. Y.
Russell, Burdall & Ward, Port Chester, N. Y.
Sternbergh, J. H. & Son, Reading, Pa.
Wilson, J. Fred, Worcester, Mass.
Wm. H. Haskell Co., Pawtucket, R. I.
- Oilers.**
Wilmet & Hobbs Mfg. Co., Bridgeport, Conn.
- Oil Stones.**
Pike Mfg. Co., Pike Station, N. H.
- Ores.**
Wister, Francis, Philadelphia, Pa.
- Ox Shoes.**
Scranton Forging Co., Scranton, Pa.
- Packing.**
Morrison, Robert, St. Louis, Mo.
N. Y. Belting & Packing Co., Ltd., N. Y.
- Padlocks.**
Ames Sword Co., Chicopee, Mass.
Fraim, E. T., Lancaster, Pa.
Independent Electric Co., Chicago, Ill.
Wolf, W. & L., Phila., Pa.
- Paint Burners.**
Dangler Stove & Mfg. Co., Cleveland, Ohio.
- Paint Cans.**
Wilmet & Hobbs Mfg. Co., Bridgeport, Conn.
- Pants Stretcher.**
Covert Mfg. Co., West Troy, N. Y.
- Patent Solicitors.**
Butler, C. N., Phila., Pa.
Jenner, H. W. T., Washington, D. C.
Howson & Howson, Philadelphia and Washington.
Stocking, E. B., Washington, D. C.
- Pattern Letters.**
Wells, Heber, 157 William St., N. Y.
- Perforated Metal.**
Clinton Wire Cloth Co., Clinton, Mass.
Harrington & King Perforating Co., Chicago, Ill.
Hendrick Mfg. Co., Ltd., Carbondale, Pa.
- Phosphor Bronze.**
Phosphor Bronze Smelting Co., Limited, Philadelphia.
- Phosphor Tin.**
Crescent Phosphorized Metal Co., Philadelphia, Pa.
Halk & Naumann, 516 Pearl, N. Y.
- Picks and Mattocks.**
Piomb, Fayette R., Philadelphia, Pa.
- Pig Iron.**
Houston, C. B. & Co., Philadelphia, Pa.
Montour Iron & Steel Co., Danville, Pa.
Naylor & Co., 45 Wall, N. Y.
Pilling & Crane, Philadelphia, Pa.
Samuel, Frank, Philadelphia, Pa.
- Pig Iron Storage.**
Am. Pig Iron Storage Warrant Co., 44 Wall, N. Y.
- Pile Drivers.**
Vulcan Iron Works, Chicago, Ill.
- Pipe, Bent.**
National Pipe Bending Co., New Haven, Conn.
- Pipe Cutting and Threading Machines.**
Armstrong Mfg. Co., Bridgeport, Conn.
Bignall & Keeler Mfg. Co., St. Louis, Mo.
Detrick & Harvey Mch. Co., Baltimore, Md.
Merrill Mfg. Co., Toledo, O.
Pancoast, Henry B. & Co., Phila.
Saunders Sons, D., Yonkers, N. Y.
Walworth Mfg. Co., Boston, Mass.
- Pipe Grips.**
Prentiss Vise Co., 44 Barclay, N. Y.
- Pipes, Fittings, &c., Makers of.**
McNab & Harlin Mfg. Co., N. Y.
- Pipe, Water and Gas, Makers of.**
Donaldson Iron Co., Emaus, Pa.
Riverside Iron Works, Wheeling, W. Va.
Wood, R. D. & Co., Philadelphia, Pa.
- Plane Irons, Manufacturers of.**
Buck Bros., Millbury, Mass.
Buck, Chas., Millbury, Mass.
- Planers.**
Detrick & Harvey Mch. Co., Baltimore, Md.
New Haven Mfg. Co., New Haven, Conn.
Powell Planer Co., Worcester, Mass.
Wilson, W. A., Worcester, Mass.
- Planes, Manufacturers of.**
Stanley Rule & Level Co., N. Y.
- Plated Ware.**
Boardman, L. & Son, New Haddam, Ct.
Holmes & Edwards Silver Co., Bridgeport, Conn.
Rogers, Wm. Mfg. Co., Hartford, Ct.
- Plate, Iron and Steel, Mfrs. of.**
Etna-Standard Iron & Steel Co., Bridgeport, Ct.
Lukens Iron & Steel Co., Coatesville, Pa.
Mahoning Valley Iron Co., Youngstown, Ohio.
Moorhead-McLean Co., Pittsburgh, Pa.
McIlvain & Sons, Reading, Pa.
Pottstown Iron Co., Pottstown, Pa.
Pottsville Iron & Steel Co., Pottsville, Pa.
Singer, Nimaick & Co., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, Ohio.
Wood, Alan Co., Philadelphia.
- Plating, Nickel, Brass and Silver.**
Wilmet & Hobbs Mfg. Co., Bridgeport, Conn.
- Polishing Machines.**
Watson & Stillman, 204 E. 43d, N. Y.
- Post Hole Diggers.**
Gibbs Mfg. Co., Canton, Ohio.
Kohler, F. E. & Co., Canton, O.
- Poultry Nettings.**
Barnum, E. T., Detroit, Mich.
Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.
N. J. Wire Cloth Co., Trenton, N. J.
"Silver Finish."
Tyler Wire Works Co., W. S., Cleveland, O.
Wright & Colton Wire Cloth Co., Worcester, Mass.
- Powder.**
Lafin & Rand Powder Co., 29 Murray.
New York Powder Co., 62 Liberty St., N. Y.
- Power Hack Saws.**
Millers Falls Co., 93 Reade St., N. Y.
- Power Hammers.**
Dienelt & Elsenhardt, Philadelphia.
Dupont Mfg. Co., St. Johnsbury, Vt.
Jenkins & Lingle, Bellefonte, Pa.
Long & Allstatter Co., Hamilton, Ohio.
Miner & Peck Mfg. Co., New Haven, Conn.
Scranton & Co., New Haven, Conn.
- Power Transmitting Machinery.**
Dodge Mfg. Co., Mishawaka, Ind.
- Presses, Dies, &c.**
E. W. Bliss Co., Brooklyn, N. Y.
Crosby, G. A. & Co., Chicago, Ill.
Stark Mch. & Tool Co., Buffalo, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Waterbury Mch. Co., Waterbury, Ct.
- Presses, Power, Makers of.**
Bliss, E. W. Co., Brooklyn, N. Y.
Manville, E. J. Mch. Co., Waterbury, Ct.
Merriman, A. H., Meriden, Conn.
Stark Mch. & Tool Co., Buffalo, N. Y.
Waterbury Farrel Foundry & Machine Co., Waterbury, Conn.
- Printers.**
Griffith, Axtell & Cady Co., Holyoke, Mass.
- Pulleys.**
Brown, A. & F., 17 Dey St., N. Y.
Dodge Mfg. Co., Mishawaka, Ind.
Keystone Clutch Mch. Wks., Phila., Pa.
- Pulverizing Mills.**
Bradley Fertilizer Co., Boston, Mass.
- Pumping Machinery.**
Dean Bros. Steam Pump Works, Indianapolis, Ind.
Goulds Mfg. Co., Seneca Falls, N. Y.
Hooker-Colville Steam Pump Co., St. Louis, Mo.
McGowan, J. H. & Co., Cincinnati, O.
Maslin, J. & Son, Jersey City, N. J.
Norwalk Iron Works Co., So. Norwalk, Conn.
Southwark Fdy. & Mch. Co., Phila., Pa.
Valley Pump Works, Easthampton, Mass.
Worthington, Henry R., 86 and 88 Liberty St., N. Y.
- Pumps, Makers of.**
Bellevue Pump Co., Bellevue, Iowa.
Deming Co., Salem, O.
Douglas, W. & B., Middletown, Conn.
Goulds Mfg. Co., Seneca Falls, N. Y.
Myers, F. E. & Bro., Ashland, O.
- Punches.**
Richards, I. P., Providence, R. I.
- Punches and Shears, Hand and Power.**
E. W. Bliss Co., Brooklyn, N. Y.
Crosby, G. A. & Co., Chicago, Ill.
Henderer, A. L., Wilmington, Del.
Long & Allstatter Co., Hamilton, Ohio.
Stark Mch. & Tool Co., Buffalo, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Waterbury Farrel Foundry & Machine Co., Waterbury, Conn.
Watson & Stillman, 204 E. 43d, N. Y.
- Rails, Old and New.**
Ferry, W. H. & Co., Providence, R. I.
- Rat and Mouse Traps.**
Estey, W. S., 65 Fulton, N. Y.
Ripley Mfg. Co., Unionville, Conn.
- Razors, Manufacturers of.**
Torrey, J. R. Razor Co., Worcester, Mass.
- Razor Guard.**
Murphy, P. D., Lockport, N. Y.
- Razor Sharpener.**
Dame, Stoddard & Kendall, Boston, Mass.
- Reels.**
Hendryx, A. B. Co., New Haven, Conn.
- Refrigerator Door Fasteners.**
Conroy, P. J. & Co., Philadelphia.
- Rivers.**
Blake & Johnson, Waterbury, Conn.
Boyce Rivet Co., Muncie, Ind.
Burden Iron Co., Troy, N. Y.
Clark & Cowles, Plainville, Conn.
Cobb & Drew, Plymouth, Mass.
Sternbergh, J. H. & Son, Reading, Pa.
Townsend, W. P. & Co., New Brighton, Pa.
- Riveting Machines.**
Att. Jno. & Sons, New Haven, Conn.
- Rolling Mill Machinery.**
Birmingham Iron F'dry, Birmingham, Conn.
Booth, The Lloyd Co., Youngstown, O.
Leachburg Foundry & Mch. Co., Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass.
Robinson-Rea Mfg. Co., Pittsburgh.
Totten & Hogg Iron and Steel F'dry Co., Pittsburgh, Pa.
Trethewey Mfg. Co., Pittsburgh, Pa.
Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.
- Rolls, Chilled, Sand and Steel.**
Birmingham Iron Foundry, Birmingham, Conn.
Booth, The Lloyd Co., Youngstown, O.
East Chicago F'dry Co., Chicago, Ill.
Garrison, A. F'dry Co., Pittsburgh, Pa.
Robinson-Rea Mfg. Co., Pittsburgh, Pa.
Seaman, Sleeth & Black, Pittsburgh.
Totten & Hogg Iron and Steel F'dry Co., Pittsburgh, Pa.
- Roofing.**
Cambridge Roofing Co., Cambridge, O.
Cincinnati Corrugating Co., Piqua, O.
Kanneberg Roofing Co., Canton, O.
N. Y. Iron Roofing & Corrugating Co., Jersey City, N. J.
- Rope and Web Goods.**
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Wks., Farmer, N. Y.
- Rope Wheels.**
Cresson, Geo. V. Co., Philadelphia, Pa.
- Rubber Goods.**
Candfield, H. O., Bridgeport, Conn.
- Rules, Manufacturers of.**
Keuffel & Esser Co., New York.
Larkin Rule Co., Saginaw, Mich.
Stanley Rule & Level Co., 29 Chambers.
- Rust Preventive.**
Bridgeport Gun Implement Co., 315-316 Broadway, N. Y.
- Sad Irons.**
Streeter, N. R. & Co., Groton, N. Y.
- Sad Irons, Gas.**
Boligano Mfg. Co., Baltimore, Md.
- Sand Paper.**
Baeder, Adamson & Co., Phila., Pa.
- Sash Balances.**
Caldwell Mfg. Co., Rochester, N. Y.
Pullman Sash Balance Co., Rochester, N. Y.
- Sash Cords and Chains.**
Morton, Thos., 65 Elizabeth, N. Y.
Ossawan Mills Co., Norwich, Conn.
Samson Cordage Works, Boston, Mass.
Smith & Egge Mfg. Co., Bridgeport.
- Sash Pulleys.**
Palmer Hardware Mfg. Co., Troy, N. Y.
- Sash Weights.**
Brown, E. E. & Co., Philadelphia, Pa.
Norton Bros., Chicago, Ill.
- Saw Filing Machines.**
Diston, Henry & Sons, Philadelphia, Pa.
- Saws, Makers of.**
Diston, Henry & Sons, Phila., Pa.
National Saw Co., 96 Reade St., N. Y.
Simonds Mfg. Co., Fitchburg, Mass.
- Saw Vises.**
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
- Saw Sets.**
Taintor Mfg. Co., 84-86 Chambers, N. Y.
- Scales, Manufacturers of.**
Buffalo Scale Co., Buffalo, N. Y.
Chatillon, John & Sons, 85-89 Cliff, N. Y.
- Scrapers, Road.**
Am. Steel Scraper Co., Sydney, Ohio.
Kilbourne & Jacobs Mfg. Co., Columbus, O.
Sidney Steel Scraper Co., Sidney, O.
- Screens, Coal and Ore.**
Hendrick Mfg. Co., Ltd., Carbondale, Pa.
- Screens, Door and Window.**
White, Van Glnh & Co., 15-17 Chatham Sq., N. Y.
- Screw Cutting Machinery.**
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
- Screw Drivers.**
Brown, R. H. & Co., New Haven, Conn.
Mayhew, H. H. Co., Shelburne Falls, Mass.
- Screw Plate and Pipe Cutter.**
Jarecki Mfg. Co., Erie, Pa.
- Screws, Makers of.**
American Screw Co., Providence, R. I.
Blake & Johnson, Waterbury, Conn.
Wm. H. Haskell Co., Pawtucket.
Miles, F. S., 205 Quarry, Philadelphia.
Reynolds & Co., New Haven, Conn.
Worcester Machine Screw Co., Worcester, Mass.
- Scroll Saws.**
Barnes, W. F. & John, Rockford, Ill.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
- Seythe Stones and Whetstones.**
Pike Mfg. Co., Pike Stat'n, N. H.
Cleveland Stone Co., Cleveland, O.
- Shaft Coupling.**
Columbian Novelty Co., North East, Penna.
- Shafting, Makers of.**
Brown, A. & F., 17 Dey St., N. Y.
Cresson, Geo. V. Co., Philadelphia, Pa.
Fairmount Mch. Co., Philadelphia, Pa.
Sellers, Wm. & Co., Inc., Phila., Pa.
Stow Mfg. Co., Binghamton, N. Y.
- Shaft Support.**
Decatur Shaft Support Co., Decatur, Ill.
- Shaped Iron and Steel, Manufacturers of.**
Etna-Standard Iron & Steel Co., Bridgeport, Ct.
East Chicago F'dry Co., Chicago, Ill.

- Allentown Rolling Mill, Allentown, Pa.**
Lockhart Iron & Steel Co., Pittsburgh, Pa.
- Passaic Rolling Mill Co., Paterson, N.J.**
Pottsville Iron & Steel Co., Pottsville, Pa.
- Roberts, A. & P. & Co., Phila., Pa.**
The Phoenix Iron Co., Phila., Pa.
Tudor Iron Works, St. Louis, Mo.
- Shears and Scissors.**
Acme Shear Co., Bridgeport, Conn.
Heinrichs, R. Sons Co., Newark, N. J.
- Sheet Iron and Steel, Manufacturers of.**
Aetna-Standard Iron and Steel Co., Bridgeport, O.
Cambridge Iron & Steel Co., Cambridge, Ohio.
Chess Bros., Pittsburgh, Pa.
Jersey City Galvanizing Co., 112 John St., N. Y.
Mahoning Valley Iron Co., Livingston, Ohio.
Morehead-McCleane Co., Pittsburgh, Pa.
Pierion & Co., 29 Broadway, N. Y.
Singer, Nimick & Co., Ltd., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Alan Wood Co., Philadelphia.
W. Dewees Wood Co., McKeesport, Pa.
- Sheet Zinc.**
Matthiessen & Hegeler Zinc Co., La Salle, Ill.
- Show Cases.**
Union Show Case Co., Chicago, Ill.
- Sinks.**
Douglas, W. & B., Middletown, Conn.
- Skates, Ice.**
Keene Mfg. Co., Keene, N. H.
Winslow, Sam'l, Skate Mfg. Co., Worcester, Mass.
- Skates, Roller.**
Henley, M. C., Richmond, Ind.
Winslow, Sam'l, Skate Mfg. Co., Worcester, Mass.
- Slag Machines.**
Cambria Iron Co., Johnstown, Pa.
- Smelting Works.**
Reeves, Paul S., 760 S. Broad, Phila.
- Soldering Coppers.**
Clendenin Bros., Baltimore, Md.
Covert Mfg. Co., West Troy, N. Y.
- Speaking Tubes.**
Ostrander, W. R. & Co., 204 Fulton St. N. Y.
Wollensak, J. F., Chicago, Ill.
- Spelter.**
Matthiessen & Hegeler Zinc Co., La Salle, Ill.
Missouri Metal Co., St. Louis, Mo.
- Spoons and Forks.**
Boardman, L. & Son, New Haddam, Conn.
Holmes & Edwards Silver Co., Bridgeport, Conn.
Rogers, The Wm. Mfg. Co., Hartford, Conn.
- Sporting Goods.**
Hartley & Graham, 318-315 B'way, N. Y.
- Springs.**
Clark & Cowles, Plainville, Ct.
Coiled Wire Belting Co., Jersey City, N. J.
Dunbar Bros., Bristol, Conn.
Miller & Van Winkle, Brooklyn, N. Y.
Morgan Spring Co., Worcester, Mass.
Roland, Wm. & Harvey, Phila., Pa.
Sabin Machine Co., Montpelier, Vt.
Tuck Mfg. Co., Brockton, Mass.
Washburn & Moen Mfg. Co., Worcester, Mass.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.
- Spring Hinges.**
Bommer Bros., Brooklyn, N. Y.
Pullman Sash Balance Co., Rochester, N. Y.
Stover Mfg. Co., Freeport, Ill.
Van Wagoner & Williams Hdw. Co., 14 Warren St., N. Y.
- Stamped Ware.**
Am. Stamping Co., 104 & 106 John St., New York.
- Stamping Works.**
Avery Stamping Co., Cleveland, O.
Cleveland Stamping & Tool Co., Cleveland, O.
- Staples.**
Cobb & Drew, Plymouth, Mass.
Titchener, E.H. & Co., Binghamton, N. Y.
- Steam Gauges.**
Bristol Co., Waterbury, Conn.
- Steam Hammers, &c., Makers of.**
Dienelt & Eisenhardt, Philadelphia.
Dudgeon, Richard, 24 Columbia Street, N. Y.
Tretthwey Mfg. Co., Pittsburgh, Pa.
- Steam Heating & Oil Separators.**
Webster, Warren & Co., Camden, N. J.
- Steam Separators.**
Goubert Mfg. Co., 32 Cortlandt St., N. Y.
Harrison Safety Boiler Wks., Phila., Pa.
Webster, Warren & Co., Camden, N. J.
- Steam Specialties.**
Lunkenheimer Co., Cincinnati, O.
- Steel, Cold Rolled Strip.**
Superior Steel Co., Pittsburgh, Pa.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
- Steel Figures and Alphabet s.**
Krogsrud, W., 61 Fulton St., N. Y.
- Steel Importers.**
Abbott, Wheelock & Co., N. Y. and Boston.
Hobson, Francis, Seaman & Co., 97 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Newton & Shipman, 83 John, N. Y.
Whitney, A. R. & Co., B'way, N. Y.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.
- Steel (Mushet's Special).**
Jones, B. M. & Co., Boston.
- Steel Manufacturers.**
Aetna-Standard Iron & Steel Co., Bridgeport, O.
Bethlehem Iron Co., S. Bethlehem, Pa.
Baker, Hermann & Co., 103 Duane St. Chester Steel Castings Co., Phila., Pa.
Chester Steel Castings Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Crescent Steel Co., Pittsburgh, Pa.
Frankford Steel Co., Philadelphia.
Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.
Hobson, Francis, Seaman & Co., 97 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Kayser, Ellison & Co., Sheffield, Eng.
La Belle Steel Co., Pittsburgh, Pa.
Lukens Iron & Steel Co., Coatesville, Pa.
Moorehead-McCleane Co., Pittsburgh, Pa.
Moss, F. W., 83 John, N. Y.
Pottsville Iron and Steel Co., Pottsville, Pa.
Bowland, Wm. & Harvey, Frankford, Philadelphia.
Singer, Nimick & Co., Pittsburgh, Pa.
Superior Steel Co., Pittsburgh, Pa.
Wardlaw & C., Sheffield, Eng.
Wetherell Bros., 83 Liberty, N. Y.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
- Steel, Manufacturers' Agents.**
Barns, C. K. & Co., Philadelphia, Pa.
Butze, Adolph, St. Louis, Mo.
Corning, Edw. & Co., 29 B'way, N. Y.
Lindsay, Jas. G. & Co., Phila., Pa.
Pierson & Co., 29 Broadway, N. Y.
- Steel Rails, Manufacturers of.**
Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Iron Co., Johnstown, Pa.
Montour Iron & Steel Co., Danville, Pa.
Riverside Iron Wks., Wheeling, W. Va.
- Steel, Tool.**
Frankford Steel Co., Philadelphia, Pa.
Jessop, Wm. & Sons, Sheffield, England, 91 John, N. Y.
Jones, B. M. & Co., Boston, Mass.
La Belle Steel Co., Pittsburgh, Pa.
- Step Ladders, Rolling.**
Bicycle Step Ladder Co., Chicago, Ill.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Croissant, M., Albany, N. Y.
Morley Bros., Saginaw, Mich.
- Stocks and Dies.**
Armstrong Mfg. Co., Bridgeport, Conn.
Billings & Spencer Co., Hartford, Conn.
Butterfield & Co., Derby Line, Vt.
Hart Mfg. Co., Cleveland, O.
Oster Mfg. Co., Cleveland, O.
Saunders' Sons, D., Yonkers, N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
- Stone Saws and Planers.**
Lincoln Iron Works, Rutland, Vt.
- Stove Linings.**
Ostrander Fire Brick Co., Troy, N. Y.
- Stove Pipe Thimbles.**
Cheney, S. & Son, Manlius, N. Y.
- Street Lamps.**
Rochester Lamp Co., 42 Park Place, New York.
Steam Gauge & Lantern Co., Syracuse, N. Y.
- Structural Iron Work.**
Lindsay, Jas. G. & Co., Phila., Pa.
- Sulphuric Acid.**
Matthiessen & Hegeler Zinc Co., La Salle, Ill.
- Tacks, Brads, Staples, &c.**
Atlas Tack Corporation, Boston, Mass.
Clendenin Bros., Baltimore, Md.
Cobb & Drew, Plymouth, Mass.
Grand Crossing Tack Co., Grand Crossing, Ill.
- Taps and Dies.**
Butterfield & Co., Derby Line, Vt.
Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.
Manning, Maxwell & Moore, 111 Liberty St., N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
- Testing Laboratories.**
Riehle Bros. Testing Mach. Co., Philadelphia.
- Testing Machines.**
Riehle Bros. Testing Mach. Co., Phila.
- Theatrical Hardware.**
Wollensak, J. F., Chicago, Ill.
- Thill Springs.**
Frost Thill Spring Co., Boston, Mass.
Sabin Machine Co., Montpelier, Vt.
- Thrust Collars.**
Gouverneur Mach. Co., Gouverneur, N. Y.
- Timber and Mineral Lands.**
Robertson, E. Co., Cincinnati, O.
- Time Record.**
Scattergood, H. W., Phila., Pa.
- Tin Plate Machinery.**
Lloyd Booth Co., Youngstown, Ohio.
- Tinning Process.**
Sands, Thos., Nashua, N. H.
- Tinware.**
Am. Stamping Co., 104 & 106 John St.
- Tire Upsetters.**
Butts & Ordway, Boston, Mass.
- Toe Calks, Steel.**
Burke, P. F., Boston, Mass.
- Tool Blocks.**
Hulbut-Rogers Mch. Co., South Sudbury, Mass.
- Tool Chests.**
Am. Tool Co., 200 W. Houston St., N. Y.
- Tool Holders.**
Armstrong Bros. Tool Co., Chicago, Ill.
- Tools.**
Brown, R. H. & Co., New Haven, Conn.
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Mayhew, H. H. Co., Shelburne Falls, Mass.
Millers Falls Co., 93 Reade, N. Y.
Richardson, C. F. & Son, Athol, Mass.
Standard Tool Co., Athol, Mass.
Stanley Rule & Level Co., 29 Chambers, Starrett, L. S., Athol, Mass.
Stevens, J., Arms & Tool Co., Chicopee Falls, Mass.
Wilkinson, A. J. & Co., Boston, Mass.
- Tools, Blacksmith and Wheelwright.**
Buffalo Forge Co., Buffalo, N. Y.
Butts & Ordway, Boston, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Plumb, Fayette R., Philadelphia, Pa.
Wiley & Russell Mfg. Co., Greenfield, Mass.
- Tools, Steam and Gas Fitters'.**
Saunders' Sons, D., Yonkers, N. Y.
- Tools, Tinner's.**
Peerless Cooker Co., Buffalo, N. Y.
- Torches, Oil and Gasoline.**
Dangler Stove & Mfg. Co., Cleveland, O.
Schneider & Trenkamp Co., Cleveland, Ohio.
- Transom Lifters.**
Wollensak, J. F., Chicago, Ill.
- Trucks, Manufacturers of.**
Clark, G. P., Windsor Locks, Conn.
- Tubes, Seamless Drawn Copper.**
Ansonia Brass & Copper Co., 19 and 21 Cliff, N. Y.
Randolph & Clowes, Waterbury, Conn.
- Tubes, Steel.**
Avery Stamping Co., Cleveland, O.
Leng's, John S. Son & Co., 4 Fletcher St., New York.
U. S. Projectile Co., Brooklyn, N. Y.
- Tumbling Barrels.**
Henderson Bros., Waterbury, Conn.
- Turnbuckles.**
Cleveland City Forge & Iron Co., Cleveland, O.
Merrill Bros., Brooklyn, E. D.
- Twist Drills, Makers of.**
Cleveland Twist Drill Co., Cleveland, Mass.
Morse Twist Drill & Machine Co., New Bedford, Mass.
New Process Twist Drill Co., Taunton, Mass.
Standard Tool Co., Cleveland.
- Valves, Gas, Water and Steam.**
Chapman Valve Mfg. Co., Boston.
Eynon-Evans Mfg. Co., Philadelphia, Pa.
Jenkins Bros., 71 John, N. Y.
Lunkenheimer Co., Cincinnati, O.
McNab & Harlin Mfg. Co., 56 John, N. Y.
- Ventilator Appliances.**
Howard & Morse, 46 Fulton St., N. Y.
- Vise Jaws.**
Newark Mch. Tool Co., Newark, N. J.
- Vises.**
Hollands Mfg. Co., Erie, Pa.
Howard Iron Works, Buffalo, N. Y.
Millers Falls Co., 93 Reade St., N. Y.
Prentiss Vise Co., 44 Barclay, N. Y.
- Wagon Jacks.**
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Works, Farmer, N. Y.
- Washers.**
Haskell, Wm. H. Co., Pawtucket, R. I.
Milton Mfg. Co., Milton, Pa.
Sternbergh, J. H. & Son, Reading, Pa.
- Watches.**
Ingersoll, R. H. & Bro., 65 Cortlandt St., N. Y.
- Water Coolers.**
Shepard, Sidney & Co., Buffalo, N. Y.
- Water Meters.**
Worthington, Henry R., 86 & 88 Liberty St., N. Y.
- Water Wheels.**
Poole, Robt. & Son Co., Baltimore, Md.
- Wheelbarrows.**
Amer. Steel Scraper Co., Sidney, Ohio.
Bryan Mfg. Co., Bryan, Ohio.
Kilbourne & Jacobs Mfg. Co., Columbus, Ohio.
Sidney Steel Scraper Co., Sidney, O.
- Window Cleaners.**
Bourke Mfg. Co., Youngstown, O.
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Samson Cordage Works, Boston, Mass.
- Wire, Manufacturers of.**
Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.
Miller & Van Winkle, Brooklyn, N. Y.
New Castle Wire Nail Co., New Castle, Pa.
New Haven Wire Mfg. Co., New Haven, Conn.
Prentiss, Geo. W. & Co., Holyoke, Mass.
Salem Wire Nail Co., Salem, O.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester.
Wetherell Bros., 83 Liberty St., N. Y.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.
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- Wire Cloth.**
Barnum, E. T., Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
Darby, Edward & Sons, Philadelphia.
Estey, W. S., 65 Fulton, N. Y.
Gilbert & Bennett Mfg. Co., 42 Cliff.
Howard & Morse, 45 Fulton, N. Y.
Ludlow-Saylor Wire Co., St. Louis, Mo.
N. J. Wire Cloth Co., Trenton, N. J.
Scheeler & Sons, Buffalo, N. Y.
Wickwire Bros., Cortland, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.
W. S. Tyler Wire Works Co., Cleve'd.
- Wire Cutters.**
King, J. M. & Co., Watertown, N. Y.
- Wire Dies.**
McFarland, Wm., Trenton, N. J.
Newton & Shipman, 83 John St., N. Y.
- Wire Fences, See Fencing, Iron and Wire.**
- Wire Goods, Manufacturers of.**
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Darby, Edward & Sons, Phila.
Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.
Ludlow-Saylor Wire Co., St. Louis.
Ossavan Mills Co., Norwich, Conn.
Scheeler & Sons, Buffalo, N. Y.
Wickwire Bros., Cortland, N. Y.
Williamson, C. T., Wire Novelty Co., Newark, N. J.
Wire Goods Co., Worcester, Mass.
- Wire Machinery.**
Am. Tool Wks., Cleveland, O.
Manville, E. J. Mch. Co., Waterbury, Ct.
Morgan Construction Co., Worcester, Mass.
Waterbury Mch. Co., Waterbury, Conn.
- Wire Straightening and Cutting Machinery.**
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- Wire Rods, Steel.**
New Castle Wire Nail Co., New Castle, Pa.
Washburn & Moen Mfg. Co., Worcester, Mass.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.
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California Wire Works, San Francisco.
Hazard Mfg. Co., Wilkesbarre, Pa.
A. Leschen & Sons Rope Co., St. Louis.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester, Mass.
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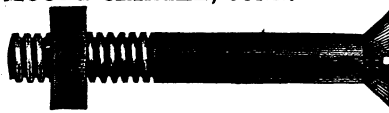
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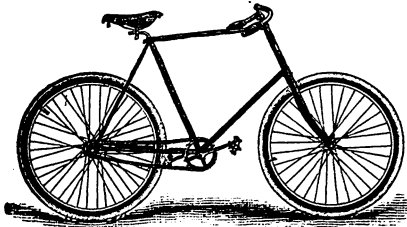
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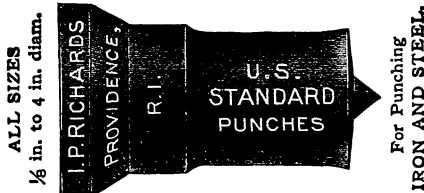
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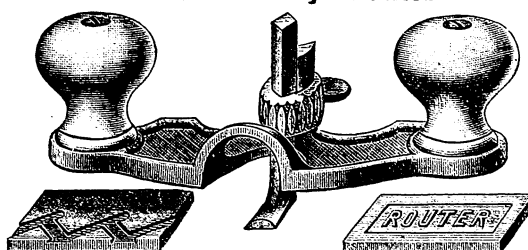
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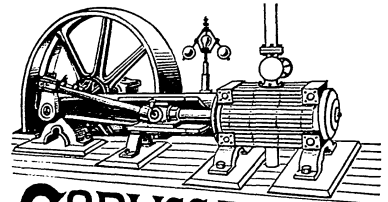
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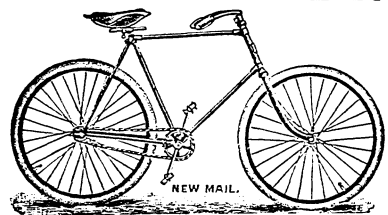
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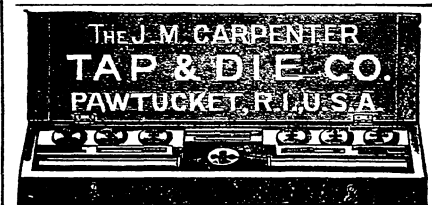
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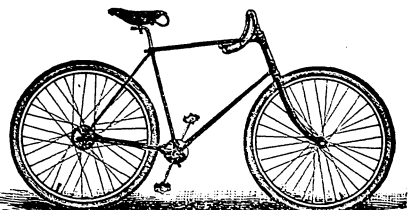


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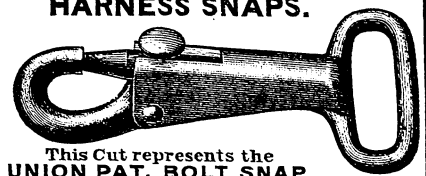
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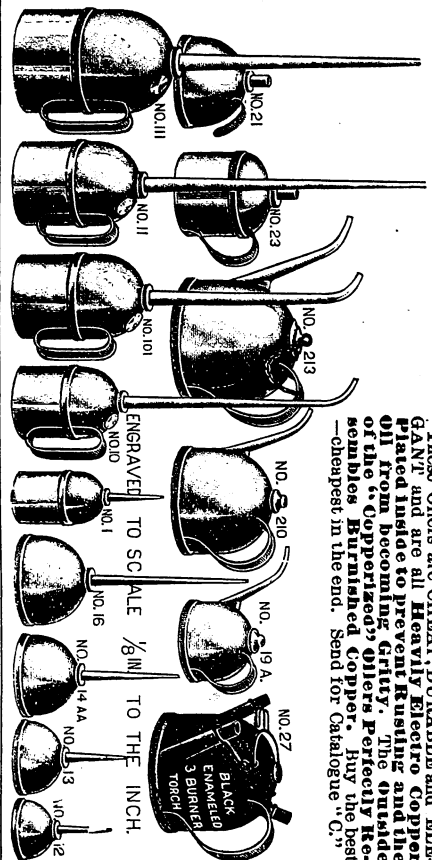
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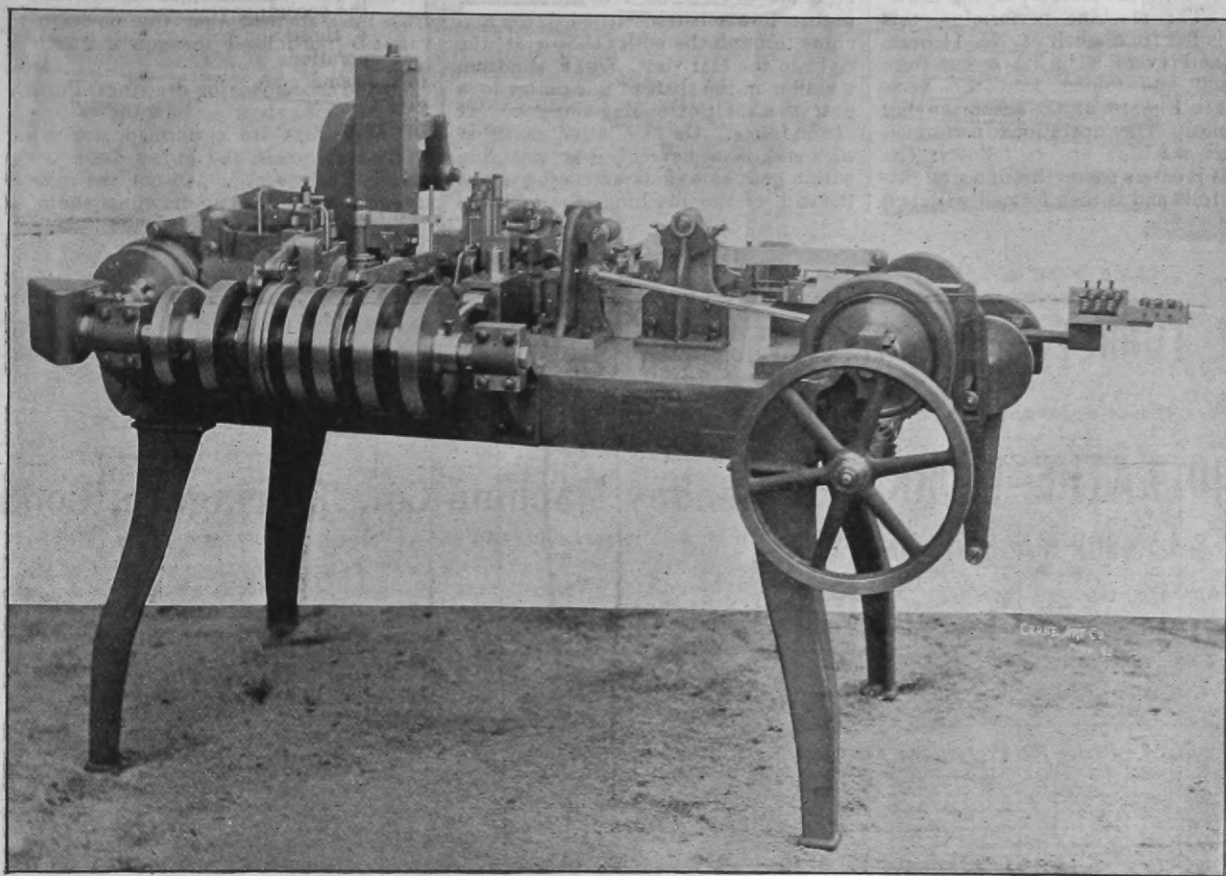


Fig. 1.—Front View.

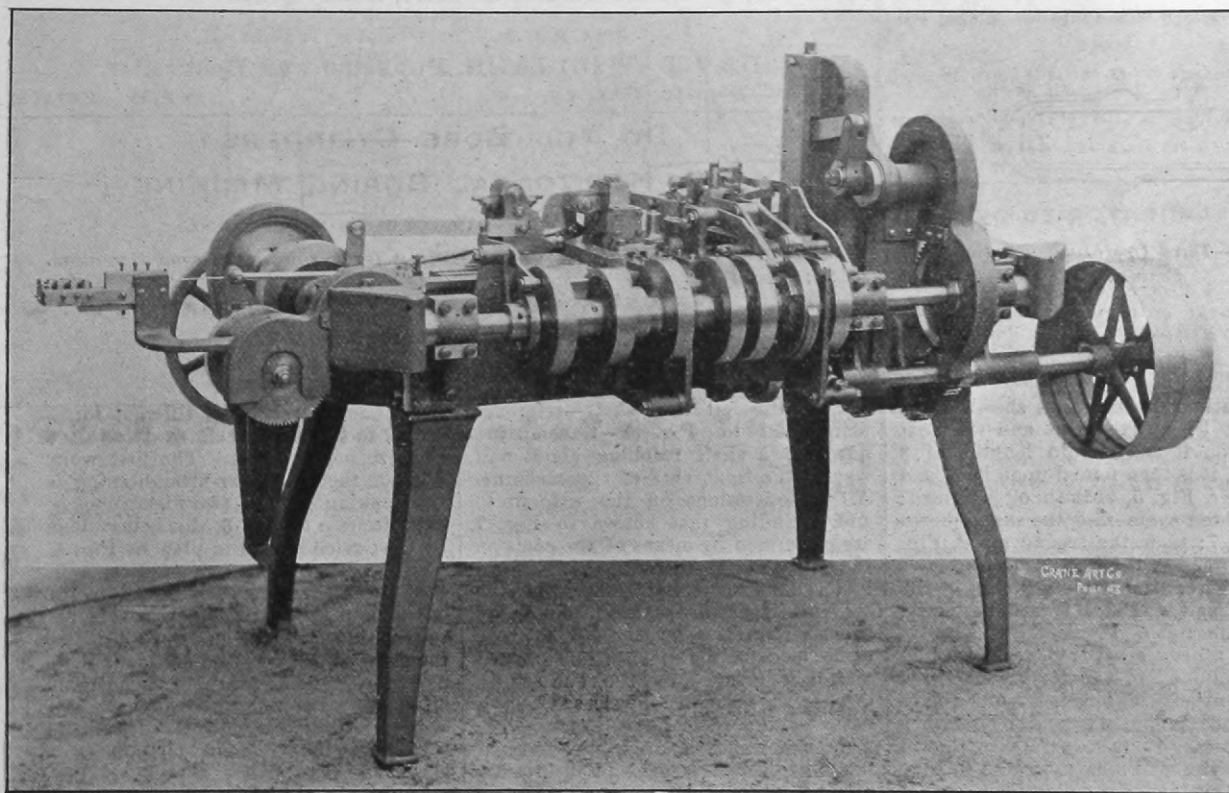


Fig. 2.—Rear View.

AN INTRICATE WIRE FORMING MACHINE.

An Intricate Wire Forming Machine.

What is perhaps the most difficult specimen of wire forming ever done is illustrated by the accompanying drawings. The machine performing this work is fed from a coil of No. 14 brass wire, and every 8 inches is cut from this coil and folded into the hook shown in Fig. 16 of the accompanying drawings. The operations performed by this machine are as follows: The wire as it enters passes through straightening rolls and is then formed with two

very simple devices, but taken collectively, or considering the work of the machine as a unit, the mechanism is quite complicated, as each step is performed by parts differing from their neighbors in design. All of the various movements are accomplished by either cam or crank devices, or a combination of both. Power is transmitted to the machine through the pulley shown at the right in the rear view, Fig. 2, and from a pinion on the shaft of this pulley to a gear on a shaft extending along the rear of the frame. On the latter shaft, at each end, is a beveled gear engaging with a gear on a shaft extending across the end of the machine, the opposite

rest or dwell while the work on the wire is being performed. This means that throughout the machine there are certain parts which are alternately at rest and in motion 40 times each minute. Some idea of the fine workmanship and accurate fitting of the many parts of this machine may be derived from the statement that the power to run it is transmitted through a 2-inch belt.

Of the accompanying drawings, Figs. 3 to 16, those showing how the principal operations are performed, are not to the same scale, the object being to give the construction and not the relative proportions. The drawings show-



Fig. 3.—First Operation, Forming Curves a b.

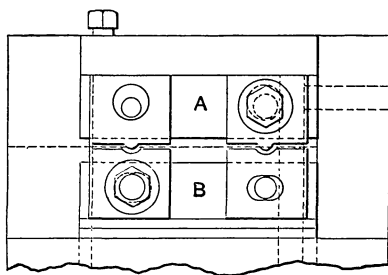


Fig. 4.—Device for Performing First Operation.

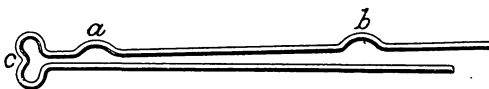


Fig. 5.—Second Operation, Forming Eye c.

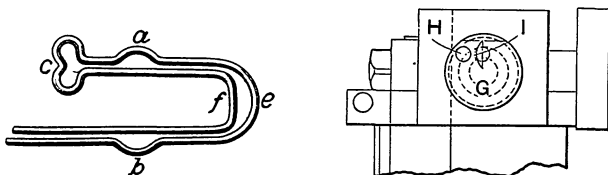


Fig. 7.—Third Operation, Bending Parts at e f.

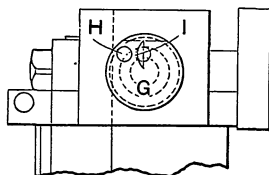


Fig. 8.—Device for Performing Third Operation.

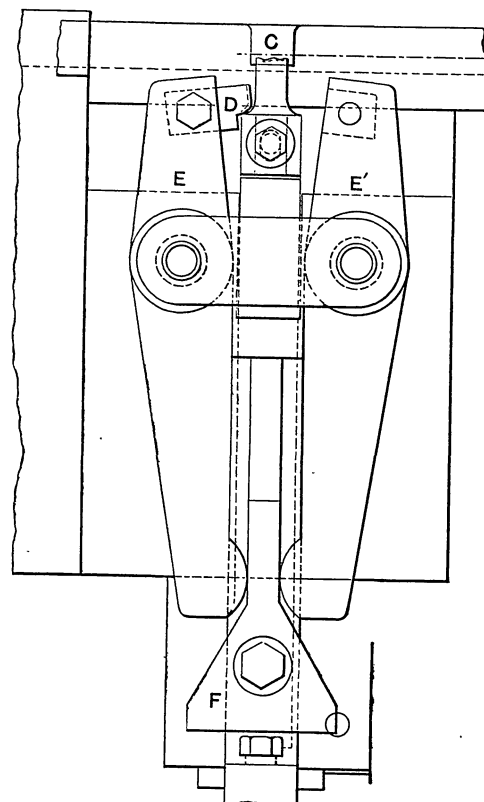


Fig. 6.—Device for Performing Second Operation.

AN INTRICATE WIRE FORMING MACHINE.

indentations or curves, as shown at a b in Fig. 3; between this and the next operation it is cut into lengths of 8 inches; it is then folded upon itself and the eye c, Fig. 5, of the hook is formed; it is folded again into the shape shown in Fig. 7; then the second eye d, Fig. 9, is formed in the free or meeting ends of the wire, after which the lips of the hook f and e, Fig. 11, are flattened; then the lip f, Fig. 13, is slightly curved up and away from what we may term the body of the hook; this lip is then bent at right angles with the body of the hook, as indicated in Fig. 15; finally the same operations are repeated in regard to the lip e, which, in the finished hook, Fig. 16, forms the guard of the hook, the portion f forming the "hump." Individually, each of these operations is accomplished by

end of the left hand shaft—reference being had to Fig. 1—transmitting power to a shaft reaching about half way of the front side of the machine. All the operations on the wire up to and including that shown in Fig. 7 are performed by means of the cams on the rear shaft, the remaining work being done by a combination of the movements of the cams and cranks on the other shafts. At each step or pause of the machine the wire is firmly gripped and it is grasped by the succeeding mechanism before being released by the parts which have done their work. This makes each motion positive, in the most decided sense, and insures the accurate and isochronous working of the several divisions. This is of the utmost importance, since the machine runs rapidly, turning out 40 completed hooks each minute, and as at each step the operating parts come to a

ing the wire itself in its different forms are all to the same scale or two-thirds the size of the hook. The first work done on the wire after straightening is the making of the two indentations or half circles a b, Fig. 3, this being done by the device shown in plan in Fig. 4. This consists of two sets of dies, A B, grooved longitudinally or parallel with the path of the wire, which passes between them and is arranged to enter the grooves. These dies are made male and female, the dies A being adjustable either way parallel with the wire, and also adjustable toward or from the wire. The dies B are adjustable only parallel with the wire. The latter dies, by means of a cam on the rear shaft, Fig. 2, are moved forward in order to form the curves a b in the wire. Between this and the next bending operation the proper length of wire is cut off.

The next operation, that of forming the eye *c*, is more complicated. The dies *C*, Fig. 6, are so shaped as to grasp the wire and form the indented part of the eye; while so held the two swinging levers *E E'* move forward and bend the two free parts of the wire around two studs to form the curved portions of

ends together. Two formers, one of which is shown at *D*, carried by the approaching ends of the levers, press the parts of the wire together and complete the eye.

Bending the wire to the form shown in Fig. 7 is the third operation, and is accomplished by the parts shown in Fig.

side of the wire *f*, as indicated in Fig. 7. The curved part *e* is formed by the other arm of the wire bearing against the curved portion of the stud *I*. While the wire is held in this position a plunger moves forward and carries the free ends of the wire down alongside of the stationary square stud, and forms

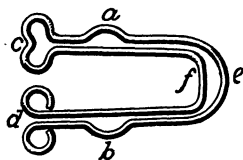


Fig. 9.—Fourth Operation, Forming Eye *d*.

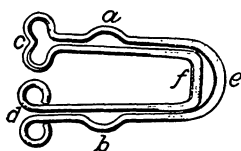


Fig. 11.—Fifth Operation, Flattening Parts *e f*.

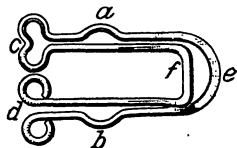


Fig. 13.—Sixth Operation, Slightly Bending Part *f*.

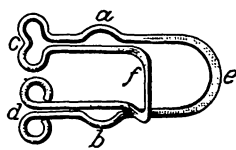


Fig. 14.—Seventh Operation, Bending Part *f* at Center.

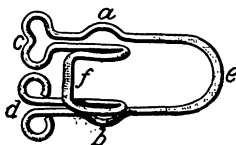


Fig. 15.—Eighth Operation, Bending Part *f* Parallel with Body.

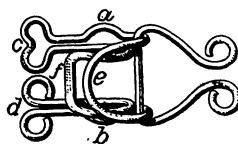


Fig. 16.—Hook and Eye Finished.

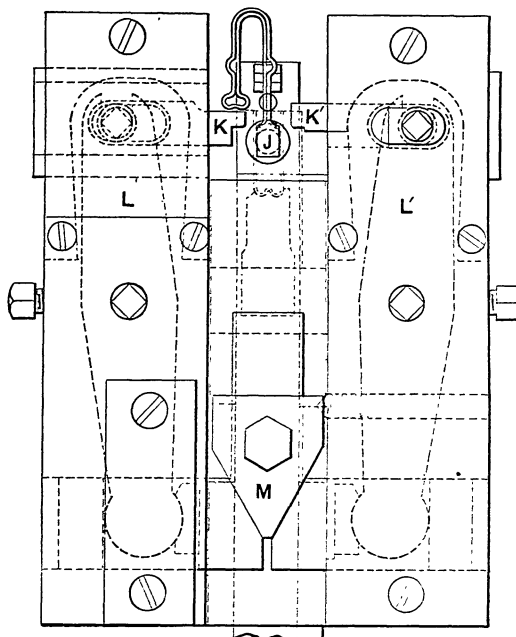


Fig. 10.—Device for Performing Fourth Operation.

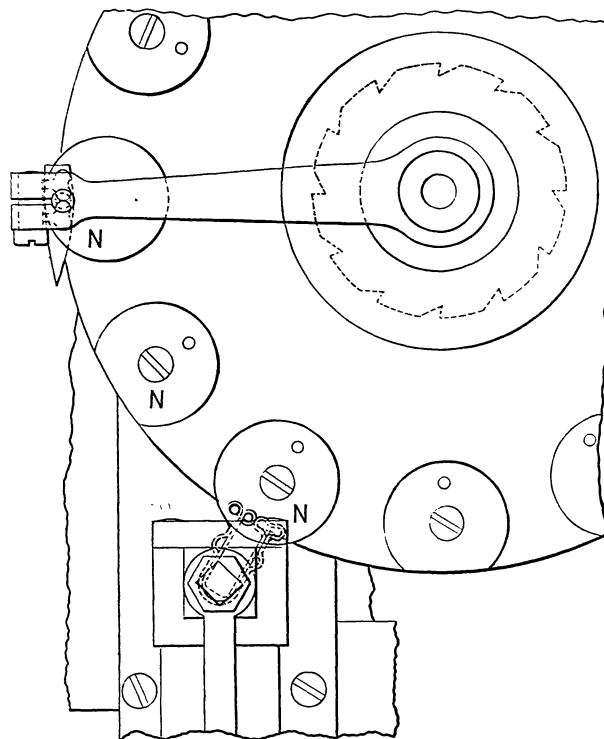


Fig. 12.—Plan of Portion of Circular Table.

AN INTRICATE WIRE FORMING MACHINE.

the eye. It is apparent that if this were the only movement the curves of the two halves of the eye *c* would not be more than a quadrant instead of being nearly three-quarters of a circle, as they are shown to be in the drawing, Fig. 5. When the levers have moved forward a sufficient distance to bring the sides of the wire parallel they come to rest, and the wedge *F* moves forward. This wedge, entering between the rear ends of the levers, brings their forward

8. Mounted upon the plate *G*, which is arranged to be turned one quarter of a revolution, are the circular stud *H* and the segmental stud *I*. The latter stud enters between the two arms of the wire at the points *ef*, Fig. 7. The plate *G* is then revolved a quarter turn, which puts a right angle bend in both arms of the wire. At the end of this movement of the plate the flat side of the stud *I* presses the wire *f* against a stationary square stud of the same size as the in-

the wire into the shape shown in Fig. 7. The first move to form the second eye *d*, Fig. 9, consists in bending the ends of the wire outward or away from each other for about one-quarter of a circle. This is done by the dies *K K'*, Fig. 10, operating against the double curved die *J*. These dies are moved by the levers *L L'*, whose rear ends are separated by the wedge *M*. Just below the die *J* will be noticed, in dotted lines, two semicircular grooves which are arranged

to move forward. The curved ends of the wire enter these grooves, which, in their continued movement, guide the ends, which are finally bent into the form of two perfect curves to finish the eye *d*.

The hook is now completed as far as the eyes *c* and *d* are concerned. Up to this stage the wire has moved forward in a straight line which is a continuation of its path at the entrance. All of the remaining work is performed while the wire moves in a circle. The wire is grasped by a carrying arm which swings it to one of 12 recesses, N N, made near the edge of a horizontally placed table, shown in quarter plan in Fig. 12, which moves one-twelfth of a turn at each movement of the parts of the machine. The dotted lines show how the wire is held by the table, those portions *a b e f* projecting beyond the edge so as to be in position to be operated upon by the finishing devices. The first work consists in slightly flattening the two portions *e f*. This is done by a press extending above and at the right hand end of the machine, as shown in Fig. 2. Next, Fig. 13, the end *f* is curved very slightly, this curved portion forming the "hump" of the finished hook. This work is also done in a press between dies suitably curved. Next a plunger passes up between the wire *a e b* and bends the part *f* to a position at right angles with the body, as shown in Fig. 14. At the next step a wire is first inserted in the angle formed by this bent portion, when a second plunger, moving in a direction from *e* to *f*, Fig. 15, bends over the part *f* and finishes what we may term the inside portion of the hook. Subsequently the same operations are performed upon the part *a e b*, which is turned over to form the completed hook shown in Fig. 16.

The machine has now been in operation for some time at the works of Richardson & De Long Brothers of Philadelphia, making a new form of large hook, as shown in Fig. 16. Since the day it was first set up it has not given the least trouble. It was designed by Robert C. Manville of the E. J. Manville Machine Company of Waterbury, Conn., to whom we are indebted for the privilege of describing it.

The Fall River Line's New Boat.

The latest accession to the magnificent fleet of steamboats of the Fall River Line—the "Priscilla"—underwent a very successful trial trip on the Hudson River last week. The "Priscilla" is the largest steamboat of her kind now afloat. She was built at Roach's shipyard, Chester, Pa., under the supervision of George Pierce of the Old Colony Steamboat Company, and forms a notable addition to the unsurpassed fleet of Sound passenger steamers. She measures 440 feet 6 inches over all, has 93 feet beam and a draft of 12 feet 6 inches on the water line. Her engines, built by W. & A. Fletcher of Hoboken, N. J., are 8500 horse-power and of the double inclined compound type. She has a registered tonnage of 5398 tons. The "Priscilla's" deck and stateroom capacity is enormous; five decks, the main saloon, gallery and dome contain 361 staterooms, besides 14 parlor rooms for the passengers and 35 apartments for the officers. The floor of the quarter deck is done in Italian mosaic. The vessel was built at a cost of \$1,500,000, and has a passenger capacity of 1500, besides the accommodation for a crew of 206 persons. Another of the Fall

River Line's boats—the "Plymouth"—met with a serious accident last week, running upon a rock near Newport, R. I., and suffering considerable damage.

Steel Plate Specifications.

A committee of the American Master Mechanics' Association has reported the following as standard specifications for boiler and fire box steel. The details of the discussion which the majority and minority reports brought out have not yet been published:

Test Pieces.—Test pieces, one from each plate, shall be in rough 2 inches wide and 36 inches long, and as nearly straight and free from twist as possible, and must in no case be annealed. Each plate shall bear the maker's name, either rolled or stamped. The heat number and, in addition, such identification marks as may be specified by ordering road shall be put on each plate and test piece.

When inspectors are present at mills, butt strips may be cut from any plate, provided such sheets are represented by test coupons. Where inspectors are not at mills, they must as far as possible be cut from a single sheet as rolled, and each sheet cut into butt strips will be represented by a test strip. All butt strips as well as test strips shall bear the heat number.

Shear Marks.—Each sheet shall be accompanied by test coupon, 2 x 36 inches long, attached at one end to sheet. To facilitate future matching, should it be necessary, both sheet and coupon shall be stamped twice across the division line with a shear mark, either round, oval, or of other agreed form, which mark should be not less than 3 inches across.

In cases where one large plate is cut into several smaller ones, all represented by one test piece, the same shear mark shall be stamped across each division line in two places before shearing, so that subsequent identification may be readily performed.

Dimensions.—Plates must be of shape and dimensions ordered. Any excess in weight over that corresponding to the dimensions in the order greater than that specified in table below will not be paid for. In computing weight of plate from dimensions, 1 cubic inch will be taken as weighing 0.2836 pound.

Allowance for overweight over that corresponding to dimensions shall be as follows:

Thickness of plate, inch....	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$
Per cent. allowance.....	10	8	7	6
Thickness of plate, inch....	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	
Per cent. allowance.....	5	$4\frac{1}{2}$	4	

Plates measuring $\frac{1}{16}$ inch less in thinnest part than that ordered, and all plates which show seams or cracks at the sheared edges, or which have cracks, slivers or depressions in the surface, or which develop defects in working, will be rejected. Rejection on account of thinness is to be made only after measurement of the actual sheet. Test pieces being prepared from the edge of the sheet are liable to be thinner than the main sheet.

Test pieces when finished will be $1\frac{1}{2}$ inches wide in test section and of full thickness of plate, and may be either parallel sided or of reduced section, and prepared either by longitudinal planing or milling. Where reduced section is adopted, the distance between bottom of fillets shall be not less than 9 inches and radius of fillets shall be not less than $\frac{1}{4}$ inch and preferably more. Elongation will be measured between

tram punch marks originally 8 inches apart and on reduced sections placed approximately equidistant between fillets. In parallel sided sections the tram punch may be applied at more than one point to insure breakage occurring between the marks.

Special Requirements for Shell Steel.—Shell steel shall have a tensile strength of from 55,000 to 65,000 pounds and an elongation of not less than 20 per cent. in 8 inches. Test pieces having rough edges removed by filing, grinding or machining shall, without annealing, bend over itself both while cold and at a cherry red heat and dipped in water at 80° F. without showing cracks and flaws in the outside edge. There shall be no chemical requirements.

Special Requirements for Fire Box Steel.—The metal is to have a tensile strength of 55,000 pounds to 65,000 pounds, with 60,000 pounds desired, and an elongation of 28 per cent. in 8 inches, preferred. The chemical composition desired is: Carbon, 0.18 per cent.; phosphorus, not above 0.03 per cent.; manganese, not above 0.4 per cent.; sulphur, not above 0.02 per cent.; silicon, not above 0.02 per cent. Plates will be rejected having a tensile strength less than 55,000 pounds, or over 65,000 pounds; an elongation less than 22 per cent. in 8 inches, and in $\frac{1}{4}$ -inch plates less than 20 per cent.; a failure to stand bending and quenching test as given for shell steel; any seam or cavity more than $\frac{1}{4}$ inch long in any of the fracture or homogeneity tests. Plates shall also be rejected having carbon over 0.25 per cent., or below 0.15 per cent.; phosphorus over 0.035 per cent.; manganese over 0.45 per cent.; silicon over 0.03 per cent., or sulphur over 0.045 per cent.

The homogeneity test shall be made in the following manner: A portion of the broken test piece shall be nicked with a chisel on opposite sides alternately, the nicks being about 1 inch apart, and the piece broken by a number of light blows, the bending being away from the nicks. If the laminations are more than $\frac{1}{4}$ inch long, the piece shall be condemned. The object of this is to open and reveal seams, due to failure to weld up, or to foreign interposed matter, or cavities due to bubbles in the ingots.

Scale Conferences at Pittsburgh.

On Tuesday, the 19th inst., the Executive Committee of the Association of Iron and Steel Sheet Manufacturers and the Wage Committee of the Amalgamated Association of Iron and Steel Workers met in Pittsburgh to discuss the wage scale governing sheet mills for the year ending June 30, 1895. J. G. Battelle of Piqua, Ohio, was chairman, and John Jarrett secretary for the manufacturers, while M. M. Garland and J. C. Kilgallon acted for the workmen. The scale, as formulated by the Amalgamated Association at Cleveland and printed in *The Iron Age* of June 7, was taken up and carefully discussed by those present, but after a session lasting four or five hours nothing was accomplished. The manufacturers requested certain modifications in the scale which the employees would not grant, and it was finally decided to adjourn and reconvene at the call of Chairman Battelle. While the differences between the sheet manufacturers and their employees are not of a very serious nature, they are of sufficient importance to cause a conflict if both sides persist in maintaining their present positions. The present scale expires on

Saturday, the 30th inst., and it is not improbable that another meeting will be held before that date for further consultation. While present prospects for a peaceful settlement of the difficulties are not favorable, neither side desires a conflict, and a settlement satisfactory to manufacturers and employees may possibly be reached when the next meeting is held.

On Wednesday, the 20th inst., the Executive Committee of the Tinned Plate Manufacturers' Association of the United States met the Wage Committee of the Amalgamated Association in the *Times* Building, Pittsburgh, but, like the meeting of the preceding day, the conference was fruitless. At the outstart it may be definitely stated that the tin plate manufacturers are willing to sign the scale they signed last year, which expires on June 30, provided that it con-

refused to accept this proposition, and insisted that a scale to be in force from July 1, 1894, until June 30, 1895, must be signed. After exhaustive arguments from each side in support of their respective positions had been heard, and it being evident a settlement could not be reached, an adjournment was had, to reconvene at the call of Wm. Banfield of Wallace, Banfield & Co., Limited, who acted as chairman.

Making the Bristol Steel Belt Lacing

Our readers are familiar with the steel belt lacing made by the Bristol Company of Waterbury, Conn. It is made of cold rolled steel, cut in zigzag form and having the points bent at right

bent up. It is evident that only steel of the best quality will stand the severe usage the fastener receives, both in the method of its manufacture and in the distortion it is subjected to when placed in the belt.

At E, Fig. 3, is shown a blank for a fastener as cut by the punch and die, the right hand portion of the drawing representing the stock after each stroke of the punch. The punch and die are constructed in the same way, as shown in the drawings, Fig. 4 being a plan view of the punch; Fig. 5 a similar view of the die; Fig. 6 a sectional elevation showing the punch and die in their relative operative positions, and Fig. 7 being a perspective view of a punch or die detached from the jaw or bed. The punch or die A is formed of a number of separate sections held together by the bolt B. Each section is

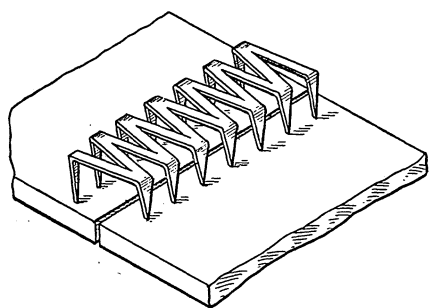


Fig. 1.—Lacing in Position on Belt Before Driving.

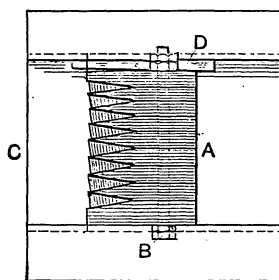


Fig. 4.—Plan View of Punch.



Fig. 2.—Section Showing Points Driven Through and Clinched.

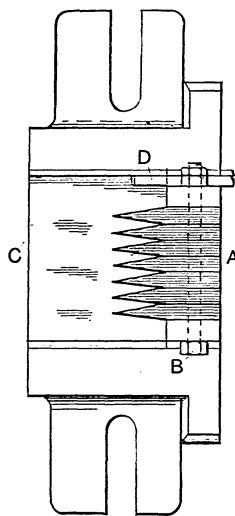


Fig. 5.—Plan View of Die.



Fig. 3.—Blank and Stock.

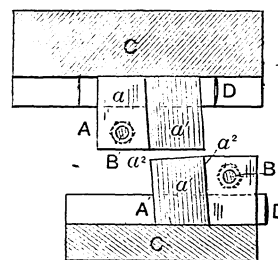


Fig. 6.—Sectional Elevation of Punch and Die.

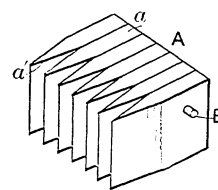


Fig. 7.—Perspective View of Punch or Die.

MAKING THE BRISTOL STEEL BELT LACING.

tinues in force only until the tariff bill is passed. If the tariff on tin plate should be lowered by the passage of the tariff bill, a lower scale of wages will be insisted upon by the manufacturers. The employers do not propose to sign a scale binding them to pay present wages for another year, with so much uncertainty confronting them as to the new duty on their product. The new tin house scale added to the regular scale this year is objected to by the manufacturers, who affirm they will not sign it. In addition to this the manufacturers strongly object to the change made in the scale by the Amalgamated Association, by which the wages of shear-men, which on the present scale are \$1 per turn, have been changed to \$1.30 per ton, which the manufacturers state is a very large increase. A proposition was made by the manufacturers at the conference to continue work under the present scale until after the tariff bill has been passed, when another conference would be held and a new scale arranged. The Scale Committee of the Amalgamated Association

angles to the body, as shown in Fig. 1. The shape is such as to give maximum strength with a minimum amount of material. The wedge shaped points, when driven through the belt, force the fibers aside so as not to cut them; hence the ends of the belt are not weakened as when holes are punched.

Through the courtesy of the Bristol Company a representative of *The Iron Age* recently had the privilege of examining the method of making these fasteners. The operations are extremely interesting and very simple, and bear evidence of having been most carefully studied, with the view of reducing the cost of manufacture and in every way possible perfecting the product. All the work is performed by presses, each press finishing from the blank a fastener of a certain size. The presses vary in size according to the size of the fasteners, the small presses being employed in forming the small fasteners, which require but little power for cutting. A strip of steel of the width necessary to make a certain fastener is automatically fed to the press, cut, and the points

provided with cutting edges tapering uniformly to a point, the combined sections forming a continuous angular or serrated cutting edge. This construction insures sharp, clean angles at the bases of the tapering cutting edges, and furthermore, in case of breakage or abrasion of any one of the sections the substitution of another involves but a slight expense and requires only a short time. Another important point is that the blanks can be successively punched out without much waste. In fact, the only waste consists of the two small tapering pieces cut from each edge, and these amount to less than 2 per cent. of the stock. The inner angles a^2 formed between the several sections a can be made as acute as may be desired by giving to the sides the necessary taper. Fig. 3 clearly illustrates how the blanks are cut from the stock. At each stroke of the press the stock is moved forward so that at the following stroke the forward points of the cutters will enter centrally between the inner angles of the blank, as shown by the dotted lines.

The blank cut from the stock falls

through a chute and rests over a rectangular opening of the same size as the finished fastener. A plunger descends and forces the blank through this opening, the operation folding or bending the points and completing the fastener, as shown in Fig. 1. A slight tumbling and the fasteners are ready for packing.

Progress in Galvanizing.

Progress in the art of galvanizing, or coating iron and steel sheets with zinc, or spelter as it is commercially known, has traveled by easy stages. Some additional conveniences have been added to galvanizing shops and various minor economies have been introduced during the past 50 years, but otherwise the methods employed are changed very little. An impetus has, however, been recently given to progress in this line, and the merits and demerits of the best known innovation are receiving considerable discussion among those engaged in the industry.

The attention of galvanizers of iron and steel sheets in the United States has been drawn with a great deal of interest during the past two years to an improvement in their art known as the Bayliss machine, so named after its inventor, who, in the interests of a company of Wolverhampton, England, controllers of the invention, has been quietly introducing it to the American trade during the time mentioned. The machine was also on exhibition during the World's Fair, in the British section, but has otherwise received but little public notice, and singularly enough had no competitors at the exposition. It is now the subject of much consideration. Several manufacturers have put the machine to a practical test, and in several instances it is known to have performed its work in the manner promised, and has been found of greater capacity than the old dipping process. One of these machines is now being placed in the works of the oldest galvanizing concern in this country.

There is but one basis of comparison upon which it can be judged, and that is with results obtained by the old hand dipped process. In this comparison it is claimed for the Bayliss machine that there is freedom from the rough edge of adhering zinc found on sheets dipped by the old process, unless they are afterward treated to remedy that defect (which is a source of expense). In addition to this, it is claimed that the total quantity of spelter used to coat a sheet is much less than in the old method, yet the coating is more perfect, being more evenly distributed and equally lasting. Other improvements will be noticed in the description of the machine which follows.

General Description.

To properly describe the method of operating under this process a ground plan of a galvanizing shop suitable for two pots is shown in Fig. 1. After leaving the mechanical pickler sheets are stocked in various vats containing water which washes the remaining acid from their surface and are passed as required to the vats situated next to the metal pots, where the Bayliss improvement commences. The course of the sheets is clearly explained in the drawing, but for details reference is made to Figs. 2 and 3, representing respectively the plan and elevation of the Bayliss machine. The positions of men and boys employed are designated in

Fig. 1 by asterisks and will be referred to later.

When the sheets of iron or steel after passing through the pickling and washing process are taken from the vat nearest to the metal pot, they are passed through rollers A, Fig. 2, which are held closely together, and immediately enter the pot of molten metal with which they are to be coated, being guided by arch B, made of light bar iron, and passed through flux rolls C. Sal ammoniac is the principal ingredient of the flux, which is allowed to partly cover the rolls. Through these rolls the sheets are forced down into the metal and are made to follow the curve of cradle D, which is submerged in the pot. When the sheets pass upward from the pot through a layer of burnt molding sand or coke dust which lies on the surface of the metal they are caught between pegged rolls E, which impart to the sheets an impression that causes an even spangle by subsequent action of cold air. Following the guide F, they fall upon link belt conveyer G. In the intervening space between the metal pot and straightening machine a boy stands whose duty it is to sweep away the

labor required to perform work in a satisfactory manner. In this respect the Bayliss machine makes considerable saving. In the old method none but strong, healthy men can be employed, as it is necessary for them to stand over the metal pot in close proximity to the fumes of burning coke to perform their work. In the new process the labor is not so arduous and fewer men are required. The number of men and boys required to operate a shop containing two pots, single turn, as shown by their positions in Fig. 1, would be 15, including superintendent or foreman. This is in comparison with at least 20 required in the old process for a much smaller daily output and more extravagant use of metal.

Quantity of Coating.

The quantity of metal used to galvanize a sheet of iron under the old process of working has been reduced by minor improvements to about 2½ ounces per square foot of surface, but a great deal of this metal (spelter) adheres to the two lower edges of the sheets, which are taken from the pot diagonally by means of a rope and pulley. In the

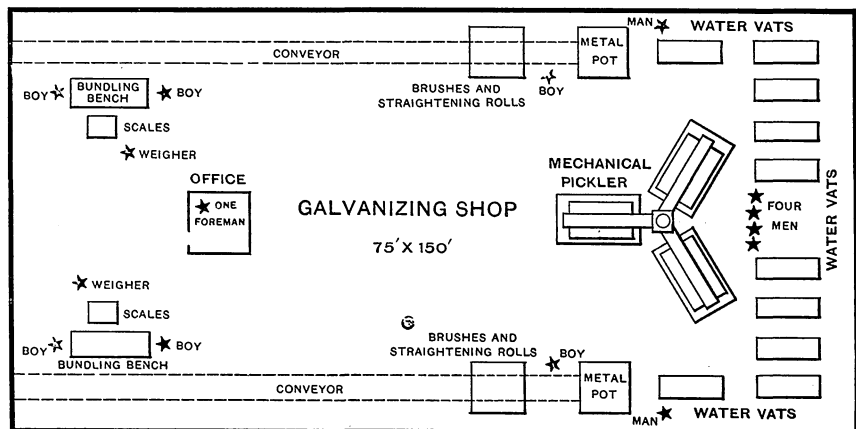


Fig. 1.—Ground Plan of Galvanizing Shop.

particles of dust remaining on the sheets and guide them into rolls at the point H. The force of these rolls passes the sheets between brushes I and on through straightening rolls J. These rolls will level any sheets that have not been badly buckled in rolling and pass them along to the conveyer, by which means they may be carried an indefinite distance, the usual distance being about 100 feet. At the end of the conveyer the sheets are taken off, inspected, bundled, weighed and branded and are ready for shipment.

An adjunct to this arrangement is the blower K suggested, but not always used excepting when a short conveyer makes it necessary for cooling the sheets. Ordinarily the sheets are sufficiently cooled without its use after they have traveled 100 feet at slow speed.

From the foregoing explanation it will be noticed that a great saving is effected by this process. The sheets are passed to the metal pot direct from the water vat, and the use of a drying oven is dispensed with and less manual labor is employed than in the old dipping process.

Labor Saving Features.

There are no improvements in machinery and appliances which command as much attention nowadays as those which tend to lessen the amount of

roller pot process the quantity of spelter required has been reduced to 2 ounces per square foot. At the same time, experts claim that the quality of the sheets is equally as good as those made by the old process, for the reason that all the metal is on the surface of the sheets evenly distributed and there are no lumps or rough edges. This is a point in favor of the improved process which both manufacturers and consumers will appreciate. The manufacturer will be glad to avail himself of the economy of metal and the consumer will find it easier to work sheets with smooth, even edges. The best results obtained in the use of the new process in Great Britain have already been equaled in this country, but it requires the very best of management and military precision in the actions of the men to produce them. In Great Britain it is customary to use a pair of cold chilled rolls about 18 inches diameter, run in ordinary housings in front of the metal pot. These rolls close up the pores of the sheets and effect a saving in the quantity of metal used. As competition becomes keener American manufacturers may resort to the same expedient. In this method of working results obtained are as follows:

Speed of conveyer, 18 feet per minute.
Speed of cold rolls, three and one-half revolutions per minute.
Size of sheets, 30 x 96 inches.

Allowing each sheet a space apart.	No. 20. Per hour, pounds.	No. 24. Per hour, pounds.	No. 26. Per hour, pounds.
8 inches	4,162	2,817	2,066
6 inches	4,064	2,780	2,032
12 inches	3,776	2,537	1,888

To illustrate the difference effected by the use of cold rolls the result of a trial is here recorded:

Without Cold Rolls.

34 sheets No. 26, 30 x 96 inches.	Pounds.
Galvanized weight	613
Black weight, not pickled	544
Gain	69

high reputation for the quality of their goods.

Iron and Spelter Required to Make 2000 Pounds of Galvanized Sheets.

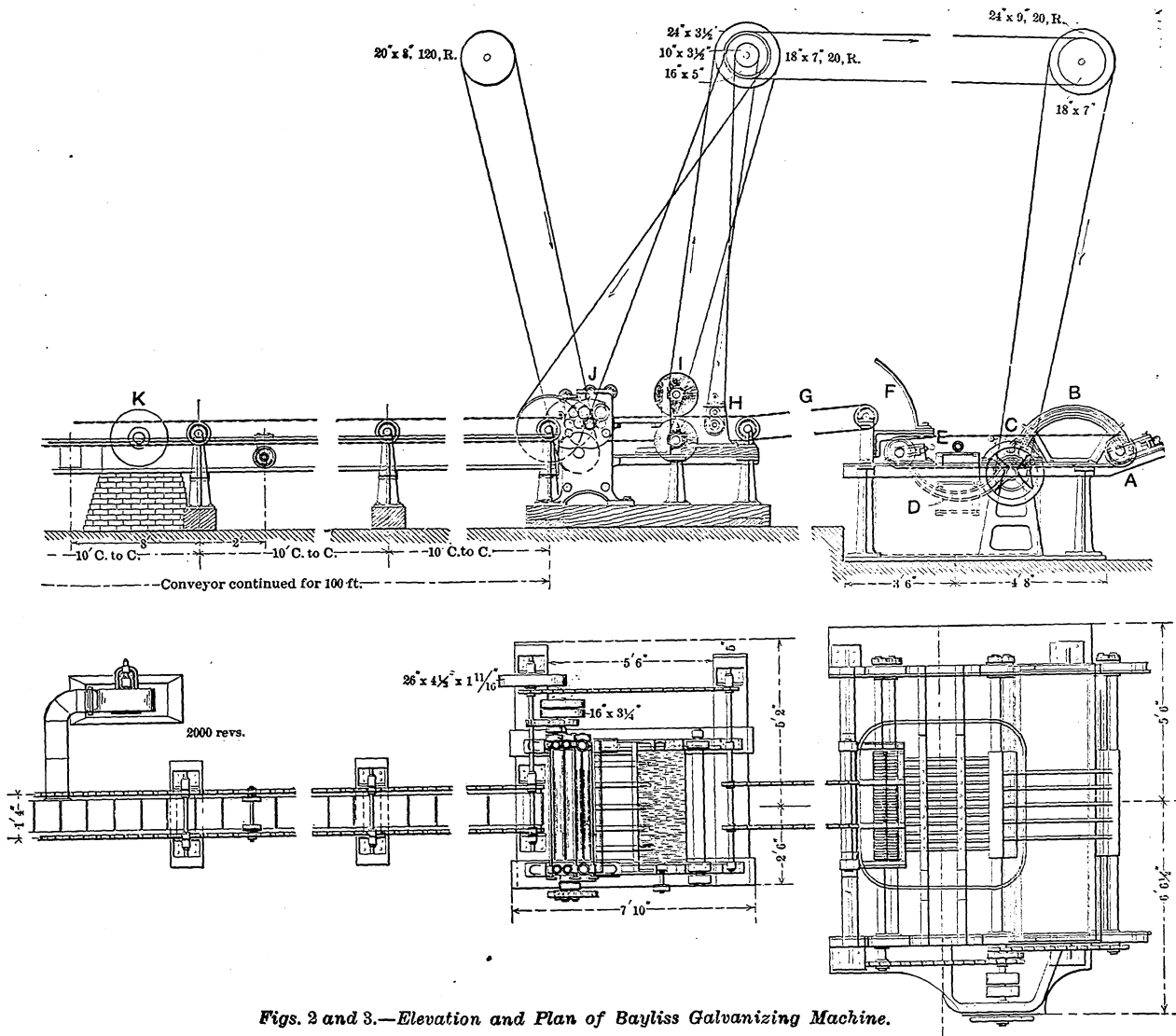
	No. 20.	No. 24.	No. 26.	No. 28.
Weight of black sheets	1,875	1,825	1,768	1,725
Gain in weight by zinc coating	125	175	232	275
Total pounds	2,000	2,000	2,000	2,000

The proportionate increase in weight of metal required to coat various gauges will tend to show the care with which galvanized price-lists are compiled.

The result of a test on No. 26, 30 x 96 inches, was as follows:

	Pounds per sheet.
Weight of black	14.125
After pickling	13.5
After galvanizing	16
Zinc coating	2½

It will be seen that to coat 20 square feet of surface 2½ pounds of spelter were consumed, an average of 2 ounces per square foot, and this quantity of metal evenly distributed will produce a sheet of first-class quality.



Figs. 2 and 3.—Elevation and Plan of Bayliss Galvanizing Machine.

With Cold Rolls.

34 sheets No. 26, 30 x 96 inches.	Pounds.
Galvanized weight	619
Black weight, not pickled	554
Gain	65

N.B.—Loss in pickling is also added to spelter consumed

In galvanizing 34 sheets there was a gain of 4 pounds in favor of the use of cold rolls. The test was made without any screw pressure on the cold rolls. The only pressure was the weight of the top roll. In this instance the coating was remarkably light and shows what can be done with this process, but it is to be hoped that American manufacturers will not attempt to attain it.

Those engaged in the manufacture of galvanized sheets and those who are seeking information regarding it will be interested in the following figures showing actual results obtained by a well known English concern who have a

Another matter which needs careful watching is the waste in pickling. In England muriatic acid is used almost exclusively. Americans use the weaker sulphuric acid, so results cannot be fairly compared, but the loss in pickling would probably be very nearly the same. Following are some results, same basis as above table, actual weights:

	No. 20.	No. 24.	No. 26.	No. 28.
Black	1,875	1,825	1,768	1,725
Pickled	1,825	1,763	1,688	1,638
Total gain	175	237	312	362
Total pounds	2,000	2,000	2,000	2,000

Materials Used for 2,000 Pounds Galvanized Sheets.

	No. 20.	No. 24.	No. 26.	No. 28.
Zinc	175	237	312	362
Sal ammoniac	11	13	16	19
Muriatic acid	350	400	450	500
Coke, 50 pounds to the ton of sheets.				

Such are the facts, carefully gathered, in regard to this important improvement in the art of galvanizing and they are presented to readers of *The Iron Age* for the purpose of throwing light upon a subject which is known to possess great interest for many.

The British consul at Leghorn, Italy, reports that it is believed that a Middlesborough firm have entered into a contract for three years for the whole output of iron ore in the island of Elba.

The directors of the Street Railroad Company of Montreal and the postmaster of that city have arranged for the inauguration of a system of mail carriage by electric cars from one part of the city to the other. Special mail cars are to be built, each to contain a staff of clerks, who will sort the mail on the way to and from the various city suburbs.

The Meyer Recarbonizing Process

Details are submitted by Dr. Wedding of Berlin in an article contributed to *Stahl und Eisen*, concerning the Meyer recarbonizing process, which is a rival on the Continent of the Darby process developed at the Phoenix Works. Alexander Thielen of the latter establishment read a paper on the subject at the international meeting in Pittsburgh some years since. The process was invented by J. Meyer of the Dudelingen Works, Luxembourg, and was, we believe, brought to the notice of some American steel works some years since. It is now in use at Dudelingen, at Ougrée, at the works of the DeWendel at Hayange and at Jœuf, at Schneider's Works, Creusot, and at the Mont Luçon plant of the Chatillon & Commentry Company. Professor Wedding states that thus far 130,000 tons of steel have been recarbonized by this method, about half of that quantity having been produced at Dudelingen. At these works the recarbonizer is prepared in the following manner: Coal with 5 to 6 per cent. of ash and less than 9 per cent. of volatile, which Dr. Wedding calls "anthracite," is ground in a Chili mill and then in a disintegrator. To the ground coal is added 7 per cent. of calcined lime mixed with water to a paste. Brick are made of this mixture, which are dried in an oven so that all hygroscopic water is eliminated. Particular pains is taken with the latter, the result being checked in the laboratory. The quantity of brick required by the carbon arrived at in the steel is weighed and put into the ladle. The Meyer patent specifies the following quantities of recarbonizing material per metric ton of steel:

Carbon in steel. Per cent.	Quantity coal-lime brick. Kilograms.
0.04 to 0.06	1.0 to 1.2
0.06 to 0.10	1.2 to 2.0
0.10 to 0.15	2.5 to 2.8
0.15 to 0.20	3.0 to 3.5
0.25 to 0.30	4.0 to 4.5
0.30 to 0.35	5.0 to 5.3
0.40 to 0.45	7.0 to 7.5
0.45 to 0.50	7.5 to 7.8
1.60 to 1.65	20.0 to 25.0

The carbon contents of the metal previous to recarbonizing has little influence upon its capacity to absorb carbon, nor is it affected by the point to which carbonizing is to be carried. In recarbonizing at Dudelingen, steel carrying 0.05 per cent. carbon to 1.5 per cent. carbon, 55 per cent. of the carbon added was absorbed. In carbonizing a 0.97 per cent. carbon open hearth steel up to 1.5 per cent. at Mont Luçon, the absorption was 52 per cent. of the quantity added.

The temperature of the bath, however, does exert a certain influence, a high heat aiding it. At Ougrée, where the open hearth furnaces are run very hot, the absorption of the pure carbon added amounts to 61 per cent. At Dudelingen and other open hearth plants it is uniformly 60 per cent., while at Mont Luçon, with pretty cold working, it is only 52 per cent.

The following tables show the uniformity of the recarbonizing at different works.

Basic Bessemer.

Carbon aimed at, 0.39 to 0.40 per cent.

Heat.	Carbon found. Per cent.	Heat.	Carbon found. Per cent.
1.....	0.36	7.....	0.39
2.....	0.41	8.....	0.38
3.....	0.37	9.....	0.38
4.....	0.41	10.....	0.39
5.....	0.40	11.....	0.39
6.....	0.37	12.....	0.36

Basic Bessemer.

Carbon aimed at, 0.40 per cent.

Heat.	Carbon found. Per cent.	Heat.	Carbon found. Per cent.
1.....	0.39	10.....	0.38
2.....	0.39	11.....	0.38
3.....	0.40	12.....	0.37
4.....	0.39	13.....	0.43
5.....	0.45	14.....	0.39
6.....	0.39	15.....	0.39
7.....	0.39	16.....	0.38
8.....	0.38	17.....	0.39
9.....	0.36	18.....	0.36

Open Hearth Steel.

Heat.	Carbon arrived at.	Carbon found.
1.....	0.39 to 0.40	0.37
2.....	0.39	0.60
3.....	0.40 to 0.43	0.46
4.....	0.55 to 0.58	0.58
5.....	0.40 to 0.49	0.45
6.....	1.60	1.50

Dr. Wedding presents the following analyses and tests of dead soft and rail steel:

Soft Steel.

Heat.	Carbon.	Phosphorus.	Manganese.	Tensile strength.	Elongation.
1.....	0.050	0.070	0.16	55,758	30.0
2.....	0.080	0.065	0.22	55,900	29.0
3.....	0.080	0.075	0.15	54,051	31.0
4.....	0.065	0.155	0.20	52,060	29.5
5.....	0.070	0.062	0.23	53,198	32.0
6.....	0.080	0.070	0.25	55,189	28.0

Rail Steel.

Heat.	Carbon.	Phosphorus.	Manganese.	Tensile strength.	Elongation.
1.....	0.35	0.079	0.718	80,507	17
2.....	0.34	0.096	0.709	82,215	16
3.....	0.31	0.078	0.682	81,646	17
4.....	0.34	0.073	0.701	80,954	18
5.....	0.37	0.094	0.709	79,228	19
6.....	0.32	0.082	0.697	81,788	15

The steel recarbonized by the Meyer process may be also used for tools, which in forging up to 0.95 carbon show great ductility and toughness and even in the harder grades do not show hair cracks. Dr. Wedding prints the following table:

Tool Steel.

Heat.	Carbon.	Phosphorus.	Manganese.	Tensile strength. Pounds per square inch.	Elongation. Per cent.
1	0.45	0.096	0.678	98,515	16.5
2	0.43	0.077	0.629	98,999	15.0
3	0.42	0.081	0.527	117,121	13.3
4	0.47	0.077	0.714	120,904	9.0
5	0.36	0.071	0.731	83,637	18.0
6	0.46	0.067	0.706	92,754	17.5
7	0.36	0.075	0.502	85,344	20.0
8	0.51	0.083	0.629	130,477	9.0
9	0.47	0.090	0.690	113,477	13.0
10	0.35	0.094	0.750	90,038	16.0
11	0.37	0.084	0.684	96,297	16.0
12	0.36	0.062	0.624	89,469	17.0
13	0.36	0.060	0.624	86,482	17.5

The works produce a moderate quantity of these various grades of special steels.

There recently sailed from the Tyne a twin screw steam vessel—the "Bambak"—the construction of which, says *Industries and Iron*, may be taken as a record in ordinary shipbuilding, as it is exactly three months since the order for her construction was given to Messrs. Armstrong, Mitchell & Co., at whose Walker yard on the Tyne she has been built. The "Bambak" is a twin screw steamer, 250 feet long, 28 feet beam and 18 feet deep, and is intended for service on the Caspian Sea. A special feature of the vessel is that

she is so arranged that she can be divided into two sections for the purpose of passing the canal locks through which she must go on her way from St. Petersburg to the Caspian Sea via the River Volga. Her machinery has been manufactured by the Wallsend Slipway & Engineering Company, the boilers being arranged for burning liquid fuel as well as coal.

Unjust Freight Discrimination.

Our attention has been directed to a flagrant case of freight discrimination by which the interests of Pittsburgh manufacturers will be seriously injured, and in all probability will result in the loss to Pittsburgh of considerable Southern trade unless speedily rectified. According to tariff No. 175 recently issued by the Pennsylvania Railroad, and which became effective on Monday, June 11, freight rates on articles of iron and steel manufacture in carload lots from New York, Brooklyn, Jersey City, Philadelphia, and all points on main line of Pennsylvania Railroad west of Philadelphia as far as Johnstown, Pa., have been arranged on a basis that practically shuts Pittsburgh out from competing with Eastern manufacturers for Southern trade. In order to clearly show the extent of this discrimination, we give below the rates applying from Eastern points and those in effect from Pittsburgh:

	New York, Brooklyn, Jersey City, Philadelphia, Harrisburg, Duncansville and Johnstown.	Pittsburgh.
	Cents.	Cents.
Americus, Ga.	19	28
Anniston, Ala.	19	28
Athens, Ga.	19	28
Atlanta, Ga.	19	28
Augusta, Ga.	15	24
Birmingham, Ala.	17	28
Chattanooga, Tenn.	17	23
Columbus, Ga.	19	28
Gadsden, Ala.	19	28
Knoxville, Tenn.	14	23
Macon, Ga.	19	28
Montgomery, Ala.	17	28
Rome, Ga.	19	28
Selma, Ala.	17	28
Talladega, Ala.	19	28
Valdosta, Ga.	41	47
Washington, Ga.	19	28

The distance from Johnstown to Pittsburgh is only 78 miles, yet there is a difference of \$2 or more per ton in favor of Johnstown over Pittsburgh. It is not expected that the same rates from both places to Southern points should apply, Pittsburgh manufacturers being satisfied to pay a slightly higher rate to compensate for the increased distance, but when compelled to pay an advance of \$2 or more per ton it is a gross injustice and should be speedily rectified. We are advised that already considerable business has been lost to Pittsburgh on account of this disadvantage in rates, and a determined effort is being made to have the Pennsylvania Railroad adjust the differences at once and put Pittsburgh manufacturers on an equitable basis with Eastern mills and allow them to fairly compete for Southern trade.

Chicago Tin Plate Mfg. Company, 533 The Rookery, Chicago, expect shortly to join the ranks of American tin plate manufacturers who roll their own black sheets. The firm are, we understand, in negotiation for a rolling mill plant and will in all probability be producing their own sheets by the fall. The present product of the company's tin plate works consists of coke and charcoal bright plates, as well as ternes, to the extent of about 1400 boxes weekly.

The Edgar Hydraulic Molding Machine.

The Edgar-Nelson Foundry Company of Mobile, Ala., build a molding machine in which the flask support is provided with a series of openings through which the patterns can be raised by hydraulic pressure and can be withdrawn from the mold when the pressure is removed. The head plate, flask support and pattern support are operated by hydraulic pressure. Journaled in the base plate A is a horizontal shaft, a , to which are attached the vertical rods a^1 , connected at their upper ends by a cross piece carrying the head plate a^2 . This shaft is operated by the hydraulic piston a^4 , Fig. 1, and carries a weighted lever, a^5 , Fig. 2. The main hydraulic cylinder B is mounted upon

A water pipe, E, is arranged within the cylinder D and passes through the table C into the cylinder c^1 , whereby water is led into the cylinder to operate the ram c^2 and elevate the plate.

Screwed upon the upper end of the cylinder c^1 is a collar, M, through which the ram works. This collar is adjustable and regulates the distance the pattern plate shall drop upon the removal of pressure.

From the water supply cylinder F, shown in section in Fig. 3, water is admitted to the main cylinder, the supplemental cylinder and the horizontal cylinder for operating the head plate by means of a valve, G. The main and supply cylinders are connected by means of pipe f , the supplemental cylinder by means of a pipe, f^1 , and the horizontal cylinder by the pipe f^2 , and f^3 indicates the supply pipe and f^4 the

are held in such position. By continuing the revolution of the wheel the valve is moved to admit water to the horizontal cylinder which operates the head plate, and this movement of the wheel will be limited by the stop in the groove contacting with the rod h^2 bearing in the groove. The moment, however, that the head plate is raised rod h^2 drops out of the groove and the revolution of the wheel may be continued, admitting water to the main cylinder, which raises the table C, flask support and pattern plate. By reversing the movement the flask support is lowered, the head plate is thrown back and the patterns withdrawn through the openings in the flask support or stripping plate.

It will be seen that by means of a single valve the patterns can be quickly and easily raised and pressed into the

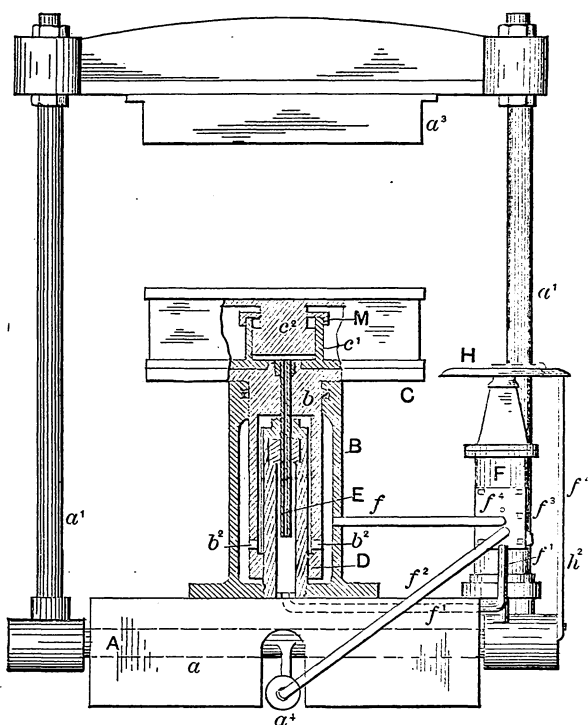


Fig. 1.—Sectional Front Elevation.

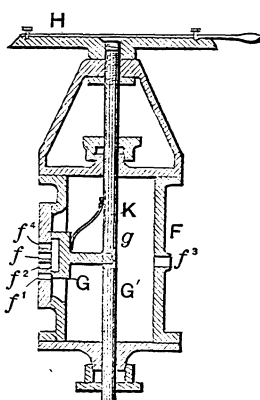


Fig. 3.—Section of Valve.

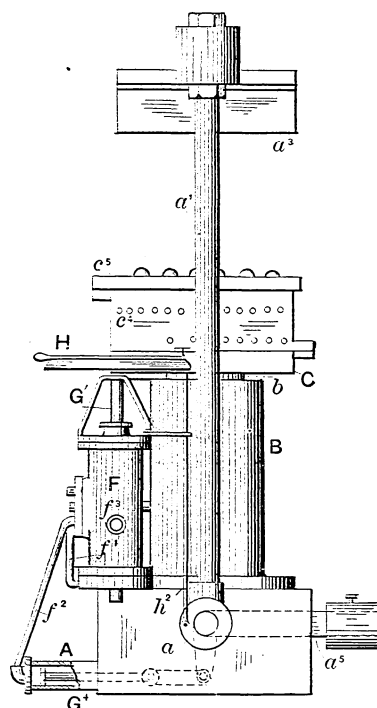


Fig. 2.—End Elevation.

THE EDGAR HYDRAULIC MOLDING MACHINE.

the base A, and within this cylinder works a ram, b , carrying the table or platform C upon its upper end. Upon the table is a second cylinder, c^1 , carrying a ram, c^2 , supporting a pattern plate, the pattern being arranged upon the upper side of the plate. A casing, c^4 , surrounds the cylinder and is bolted fast to the table C. The casing is provided with a top, c^5 , which serves as the flask support, and this top is provided with a series of openings corresponding to the shape of the patterns, and through which the patterns are raised when the ram c^2 and supporting plate are raised independent of the table and casing.

In order to raise the pattern a supplemental hydraulic cylinder, D, is provided upon the base A, this cylinder being arranged within the ram b , which raises the table carrying the pattern or flask support. The lower portion of the ram b , which envelops the supplemental cylinder, is formed with openings b^2 to permit the entrance of water into the ram when it is desired to raise the table C.

exhaust. It will thus be seen that there are five ports to the water cylinder, and coacting with four of them is a single valve, G, having a horizontal stem, g , which is attached to a vertically movable rod, G' , working in the cylinder and provided at its upper end with a hand wheel, H, which has an annular groove in its under side, and within this groove is a stop placed at a predetermined point.

A vertical shaft, h^2 , is attached at its lower end to the shaft a , and its upper end is adapted to rest in the groove when the head plate is thrown back out of use. A spring, K, is interposed between the rod and valve to keep the valve in place when the cylinder is empty.

The valve is susceptible of four distinct movements, and by turning the wheel H one-eighth of a revolution the port governing the pipe f^1 is opened and the supplemental cylinder to the cylinder c^1 raises the ram c^2 and pattern plate, thus forcing the patterns through the flask support. The patterns are now in position to be forced into the sand and

mold, and then by reversing the valve the patterns are withdrawn and the parts brought back to their original position.

Philadelphia is rapidly assuming an unquestionable position as the Eastern center of the American tin plate manufacturing industry. Nine tin plate works, with an aggregate of 60 tinning sets, are now in operation in the Quaker City. All are reported as being busy and as finding a ready market for the whole of the bright and terne plates they can produce. The aggregate output of these nine works must form an important item in the tin plate supply of the Eastern States.

Work is progressing actively on the construction of the new rolling mill and tinning plant of the Montpelier Sheet & Tin Plate Company, Montpelier, Ind. The company hope to be in operation by September 1 next, with a four-mill plant and about ten tinning pots.

Test of 17-inch Armor Plate.

A test of Bethlehem armor plate that was successful in every respect was made at the Indian Head Proving Ground on the 14th inst. The plate represented a group to be used in the turrets of the battle ship "Massachusetts." It was 8 feet 5 inches high, 12 feet 1 inch wide, 17 inches thick, and weighed 30½ tons. From the report of the board under whose supervision the trial was made we take the following data: The gun was a 12 inch breech loading rifle placed 385 feet from the plate. The first round was fired with a charge of 253 pounds of powder, the shot having a velocity of 1410 feet per second and a striking energy of 11,729 foot tons. The projectiles in both cases were Carpenter shells weighing 850 pounds.

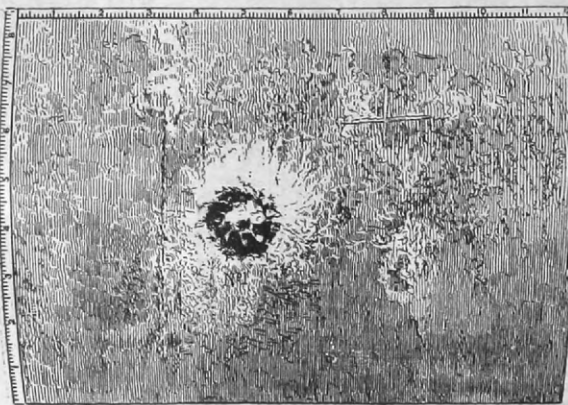
The first shell broke up from impact, most of the ogival remaining in the plate, and the core projecting 2½ inches from the face of the plate. The penetration was 6.3 inches. The diameter of the splash on the plate was 20 inches,

Lake Superior News.

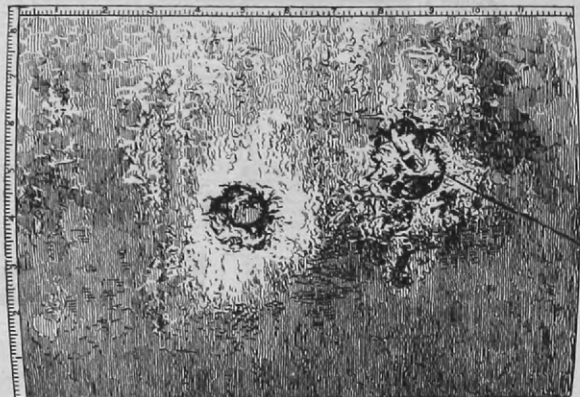
All the Norrie group on the Gogebic range was tied up on Saturday by the strike of miners, and a little over 2100 men are out. They are largely Finns and Poles, and many of them are mere tools in the hands of agitators, who must know that what they tell the men are misstatements. There seems to be no possibility of the men gaining their point; indeed, it is feared that the Norrie mines, at least, may shut down entirely and make no effort to resume, having, they state, mined and put on pile about all the ore they had sold, and being determined to call on the State for aid in loading and shipping these stock piles. If this strike keeps up long, or becomes a lockout, as is intimated, it will serve to materially expedite business on the other Lake ranges, particularly on the Mesaba, which is so situated that its mines can easily increase their output to the limit of the ore carrying roads. Such a condition of affairs would be of much more lasting and detrimental effect on the

titles of fuel that are passing. This is not to exceed 10 per cent. of the usual coal traffic, and still the canal has twice in the present month surpassed all records on one day, with 96 vessels and over 80,000 tons of freight.

The annual report of the Minnesota Iron Company, the largest of the Bessemer producers of the country, shows an output of 914,920 tons for their fiscal year, of which 866,000 tons were from the Vermillion and the rest from the Mesaba. The company are now operating two mines on the Vermillion and one on the Mesaba, and will add two to their Mesaba producers next month. They are now sending out over the Duluth & Iron Range road not far from 10,000 tons daily. The new Rockefeller road, the Duluth, Mesaba & Northern, carry about the same quantity, so that the combined shipments of this country are 120,000 tons weekly. Four mines are to be added to this list as soon as they can be gotten ready for shipping, the Biwabik, Hale, Pioneer, and Lone Jack, three of them on reduced royalties. These will add about 25 per cent. to the present daily business of the ore roads.



First Shot.



Second Shot.

TEST OF 17-INCH ARMOR PLATE.

and there was a slight bulge. The plate was uncracked and the structure sound. The heaviest piece of shell recovered weighed 26 pounds.

The second shot was with 396 pounds of powder, striking velocity of 1858 feet per second, and striking energy of 20,367 tons. The projectile broke up, part of the body welding into the plate, and the bottom of the core being about 2 inches inside the face of the plate. The estimated penetration was 15 inches. The splash on the plate was from 18 to 21 inches in diameter, the metal chipping off somewhat about the edges. There was a slight bulge with radial cracks similar to those formed by the first shot. A through crack about 1½ inch wide was opened from this impact and extended in a direction a little downward to the right hand edge of the plate. A small piece of metal just below the impact was chipped off. One of the bolts was broken and driven 2 inches to the rear. The plate and backing were driven back 2 inches and returned 1 inch, and were set over to the right about 2 inches. The heaviest piece of shell recovered was formed of the base and part of the body and weighed 132 pounds.

As this plate came up to the requirements of the specifications, the acceptance of the group it represented was recommended.

Gogebic mines than the men who are forcing the situation there can imagine. The strike will, too, have a far more serious effect on the men themselves than they probably have realized. The county of Gogebic, where are most of the mines now suspended, is almost bankrupt by reason of the unusually large expenditures made last winter for the relief of the unemployed, and it will not be able to do much the coming season. In nearly as bad condition are most of the iron counties in Michigan and Wisconsin. Public contributions will be slight when it is understood that the distress, that cannot but be terribly severe, is the result of refusal to take work when it was offered. There will be no such generous response to calls for aid as there was last winter.

There has been shipped out of Lake Superior so far this season about 1,750,000 net tons of ore, of which the Vermillion and Mesaba ranges have furnished 800,000 tons, the Gogebic about 600,000 and the Marquette the remainder. Freight rates have dropped to 70 cents a ton, and this will have a tendency to hurry ore forward. The business of the season is far ahead of any preceding year and its growth is well shown in the freight traffic of the Sault Canal, which is having the largest business in its history, notwithstanding the coal shortage and the minute quan-

Improvements have been made at the Franklin, Mesaba range, that make it the most complete mining plant on the range. It is shipping 3000 tons daily, and it is an underground mine, the property of Fr. Rockefeller, Corrigan, McKinney and others.

An interesting experiment has been made on the Austrian Northwestern Railway with an apparatus, invented by an Austrian engineer, for the purpose of enabling a locomotive to consume its own smoke. This mechanism is understood to have worked with complete success in the run of an express engine with a load of 153 tons from Vienna to Znaim, and of a freight locomotive hauling a burden of 350 tons over the same distance on the return journey. No trace of smoke was perceptible, a light steam being all that escaped from the funnel. The apparatus is said to be simple, economical, and easily worked.

At a meeting of the Upper Silesian Rolling Mill Union held at Kattowitz last month, it was stated that all the works comprised in the union were provided with sufficient orders to insure work for the next four months, the orders being mainly on Russian account.

The Crosby McDonald Automatic Soldering Machine.

This machine, intended for the use of can manufacturers, is manufactured by G. A. Crosby & Co., 176 and 178 South Clinton street, Chicago. It has been subjected to very thorough and even severe tests, from which it has emerged with most flattering results. An illustration of the machine is presented herewith.

It is designed to solder both tops and bottoms of round cans on to the bodies, this being accomplished and the can wiped, cooled and automatically discharged from the machine without handling. For heating the solder either gas, gasoline or kerosene may be used as the manufacturer prefers.

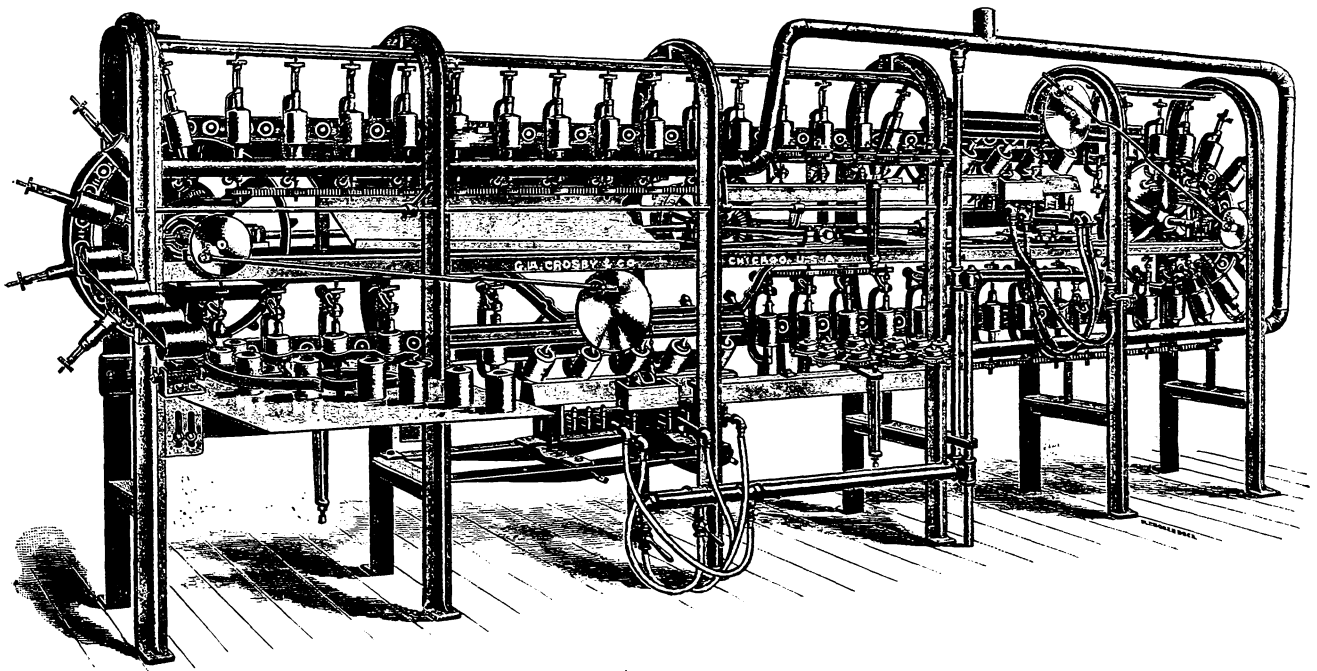
The cans are carried by a feeding device from the feeding table to the

bath, from whence the molten solder is introduced into the soldering bath by an automatic feed. This insures an even temperature in the soldering bath, as the molten metal is not cooled by the addition of new solder; and, as exactly the same amount is fed in that the cans in their passage take away, the solder is always at the same height in the bath. Two boys are required to operate the machine, which thus attended will solder the tops and bottoms on to from 35,000 to 40,000 cans in ten hours' time.

The machine is constructed in the best manner. All gears are cut and all wearing surfaces are fitted with the utmost accuracy. Each of the several can carriers runs upon a separate and independent set of trucks, thus reducing friction to a minimum. The machine occupies a floor space 4 x 20 feet and stands 4 feet in height. The firm state that they have several of these machines

and in shipyards. The buildings are more or less scattered, and power is used in dozens of places in small doses of from 10 to 30 or 40 horse-power. What better situation could there be for an economical power house—centrally located or not would make little difference—from which the all powerful "juice" could be supplied on demand and wherever required, engines and generators economical because of using large units, coal (or other fuel) and labor both at a minimum because of concentration?

In past years these needs of distributed power have been met by those dirty, patched up old engines that leak so much steam and go so lame in the exhaust as to always appeal to us and move our sympathy, especially during the times of their greatest agitation, when foundation and all often become much moved likewise. Why an en-



THE CROSBY-McDONALD AUTOMATIC SOLDERING MACHINE.

chucks, where they are automatically centered and clamped. As the chucks containing the cans are carried forward they assume an inclined position, and one end of the can is rolled through a bath of molten solder, the bath being of sufficient length to allow a 3-pound fruit can to be revolved therein about four times. As the can emerges from the bath the carrier brings it again to an upright position and it passes by an automatic wiper, which removes all surplus solder and dross, leaving the metal perfectly clean and bright. The can is then carried past a length of perforated pipe, through which a blast of cold air is forced, causing the solder to cool and set before it passes around the end of the machine, where it is reversed and the other end subjected to exactly the same process as above described, after which the cans are automatically discharged from the machine into whatever receptacle is provided for them.

The cans are revolved from the instant they are clamped in the chucks until they leave the machine, thus allowing the solder to settle evenly and soak well in between the burr of the ends and the bodies. The solder bath is adjustable in all directions so that it may accommodate various heights and diameters of cans. The solder is not melted in the same bath through which the cans revolve, but in an adjoining

in operation in some of the largest packing establishments of the United States.

The Adoption of Electric Power in Steel Works.

BY CLIFFORD C. SMITH, CHICAGO.

As a matter of fact the age of electricity has dawned, and many of us are taking for granted the ease with which our new power can be used in the most out of the way corners, and also that when we put in a new machine we do not need to be bothered with a rope or belt or a steam pipe. We simply put it in and a wire does the rest.

Humanity has welcomed the changes that electricity has brought much more quickly than it ever did any similarly great revolution in established custom, showing that at last it is overcoming that old time dread and opposition to the benefits of improvements and that unaccountable obstinacy with which it has received the products of its greatest minds. This element of conservatism, however, has shown itself pretty generally in regard to the introduction of electrical appliances in steel works.

If there is anywhere a condition of things that is specially excellent for such appliances, it is to be found here

gine or other good piece of machinery should receive less careful attention in a steel works than elsewhere, in places where it has steadier and easier work, is one of the things that no man seems to be able to find out. The best companies are giving much more attention to this point at present than ever before, and finely finished surfaces are not left so entirely unprotected from the fine mill scale and sandy dust to wear out as rapidly as possible. In other words, competition has at last forced people to do what nothing else would—cut down repair items by taking care of plant.

One thing against the use of motors has been this same go as you please habit of mill hands. A hydraulic cylinder or a wheezy old engine does not mind having the hose turned on it now and then, but a motor is a little touchy on such points and many people are afraid of it because it would be injured by dropping a sledge on the brushes. Why overlook its advantages for such a reason? Simply don't drop sledges on it. The fact is things are not expected to be kept up ship shape in the majority of mills. If they will run somehow, let them go. But with electrical machinery it is different. It demands some sort of care and hence will have respect shown it. Cleanliness is really a matter of great economic importance, and one of the best tests of the

standing of a steel company is the appearance of its yard and machinery. The best companies are those that can't afford to be dirty. In a motor we have a machine that is of the same mind. It is not as humble and submissive as the engine, grinding in the dirt and wearing itself almost to uselessness before it can get any examination and repair, for a motor spits and flashes and attracts attention to its condition immediately; nevertheless its success under street cars, down close to dusty or muddy pavements, certainly shows that it can stand considerable abuse and still be thoroughly reliable.

Of all the motors at present made the iron clad street car type is pre-eminently the one for steel works use in general. In cases where these motors have replaced engines they have given the most unqualified satisfaction. Both the Westinghouse and General Electric motors have been arranged with legs cast on the frame to bolt down to foundations. The complications necessary in gearing down ordinary high speed "stationary" motors to moderate speeds—which is their greatest drawback—is removed, and the power is delivered from these most compact and substantial machines by a shaft running only 90 or 100 revolutions per minute. An especially great advantage in the way of quick repair arises from the get at-able design. The upper half of the case is thrown back, and an injured armature or field coil can be removed, a "spare" substituted and the motor started again while an engine is being taken apart. The winding of the armatures has been greatly simplified, so that an injured coil can be replaced without disturbing the uninjured ones, and the cross section of the wiring has been increased per ampere of current so as to render it more difficult to burn out a coil. At the same time it is possible to inclose the motor comparatively air tight, certainly water tight, without trouble from overheating, especially when only used at intervals, as in most cases, an advantage of great importance in dusty places.

The fact that a motor is balanced and has no reciprocating parts and so comparatively little vibration enables it to be often put in desirable but out of the way places where an engine is troublesome. It can stand on a wall bracket or be bolted directly to the wall over a machine, or mounted on the machine itself, as in the case of billet or plateshears or turning housing screws for raising and lowering rolls. The advantages of electricity in machine shops of recent design have not yet been utilized in steel works. The disappearance of countershafts and belts here cannot be other than gradual, and the policy will no doubt be just as has been pursued in other parts of the works—"Let somebody else do the experimenting."

It might be well to say here that outside of the electrical world there seems to be little understanding of the difference between a shunt motor and a series motor. Without going into the difference electrically it may be sufficient here to say that a shunt motor is self regulating with different loads; that it, it will not run away when doing light work. A series motor is not, but increases in speed with decrease of load till it almost tears itself to pieces. A shunt motor must be started up under light load. A series motor can start under full load and develops a remarkable starting strength or torque that is out of all proportion to its torque when at full speed, as any one who has ridden much on motor cars will testify. A

shunt motor should be used where it is required to run continuously for hours, as on fans, pumps or grinding machines: a series motor where work is to be done at intervals and quick starting is necessary, as on housing screws, roller tables, conveyors and elevators.

One word as to generators: The style employed will depend somewhat on the space available. A belted generator is much easier on the engine where loads are thrown on or off suddenly and frequently, but it requires considerable floor space. If the plant is put into a building with other things, as is frequently desirable, a compound upright engine and direct connected compound wound multipolar generator is the combination giving most current per square foot of floor space. The compound winding insures the delivery of constant voltage to the motors, but if a generator is overloaded its voltage is bound to drop. So for maximum economy the size of the generator should be such that it will be equal to the maximum load to be put on. It generates just what current is called for, and so is economical at different loads, although most efficient at one point. Herein it differs from a motor, which should be equal to the average load to be carried, unless that is within 10 or 15 per cent. of the maximum. A motor will stand overloading for a short time (sometimes to double its rating in the case of well made series motors), but it does not work very economically at half or quarter its proper load, because to cut its speed down the surplus energy must be destroyed in the rheostat without doing useful work. So if economical use of current is especially sought for a motor should not be selected twice too large for its work in order to be sure that it is big enough. It may, however, be desirable to do this for practical reasons, such as possible enlargement of ingots or output, for a steel works is of all places the most uncertain as to figuring for loads and strains on machinery. They will vary on successive days, and in successive years, and grow larger rather than smaller. So a great deal of ill proportioned machinery should be attributed to the difference between the expectation and the realization. There seems to be a halt at present, so that for a few years we know about what will be done.

It certainly looks as though \$5000 or \$10,000 is too much to spend to save a \$1 or \$2 a day man, yet in these days it has been proven to be quite profitable, and it is to a recognition of this fact that electrical progress will be greatly indebted. For example, with engines widely scattered about a mill it is not always easy or possible to bring the controlling rods far enough for one man to control the whole lot from one platform, so it has been an easy solution of the question to put a man near each engine. But there would be no such complication of joints and bearings in running wires buried in a pipe wherever handiest, and one man with four or five levers can control the whole operation. Or a mill can easily be made automatic by a simple connection, so that when the tables are in position their own motion of raising or lowering will have worked a rheostat arm, thereby starting the rollers. But the need of saving men in these times of small profits and strikes requires no arguing.

Perhaps the greatest advantage electricity offers compared to other methods of power transmission is the ease of supplying it to a moving machine. Among the first machines to be electrically pro-

pelled was the traveling crane, and it very soon demonstrated the advantage of the new power for such purposes, and ropes, square shafts and hydraulic cylinders have all given up the ghost. Since then its adoption on furnace charging machines, traveling roller tables, overhead conveyors and elevators has been certain, although slow. In the future, around blast furnaces, in handling the pig iron and loading it, as well as in hoisting and charging it, there seems to be a wide field, and, in a less degree, a possibility of using it for charging cupolas and elevating stock.

One of the greatest nuisances about a steel works is the freezing of water in winter. Coke salamanders must be kept near all the hydraulic cylinders and valves. The exhausts from the engines and pumps keep everything wet or icy, or else vary the programme by freezing up. With a motor how much better! The current even prefers a cold wire to a warm one, and is ready without the least bother the coldest as well as the hottest day, with no drizzling exhaust or water in the cylinders. The small engine will soon join the street car horse. In one plant in the East the "deadly trolley" has partly replaced the smoky little locomotive, with its ear splitting whistle, and the blast furnace stock is smoothly and quietly gotten into place to go up on the elevators. Who can say that it may not be found desirable to extend this use of the electric locomotive to other kinds of narrow gauge work?

A great deal of talk has been raised about the harm caused by using a pressure of 500 volts, but aside from invalids and horses there seem to be no reliable fatalities coming from the extensive use of this pressure. Still 200 volts has seemed to be the thing for steel works, as it occasions only a little temporary inconvenience after unexpectedly having made a connection, enough to make one respectful, and as the distances are not generally great the cost of copper has not been found excessive. It is easily used for incandescent or arc lights (thanks to the perfecting of the constant current lamp) and does not require very heavy insulation.

Respecting the use of electro-magnets, it might be said that this very tempting substitute for a man and a pair of tongs has not so far given very universal satisfaction. The trouble seems to be, in handling billets or pig iron, or other rough material, to get a good enough contact. The weight of the magnet itself is also somewhat of a drawback. It seems to be better adapted to the handling of smoothly rolled steel, such as plates or rolled shapes, and in this line of work may have considerable of a future, as pieces can be picked up or dropped without complicated machinery. Its field is also limited to cold products, as magnetic attraction decreases very rapidly by heating steel.

The argument that a common machinist can repair an engine, while it takes an electrical hand to fix up a motor, will not long remain with the more general use of electricity. For though it may not satisfy on a small scale, there is no reason why, given full sway, it will not economically replace every engine and pump that is needed outside of the main engine rooms. Several new mills in the East are showing their belief in this, and are putting in mills that will be models of fine mill machinery.

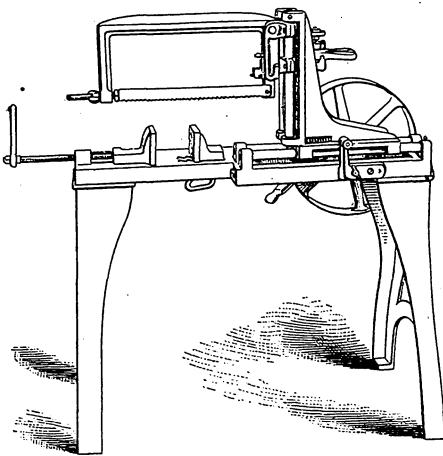
So out of this competition that the steel industry is suffering the mill of

the future will be evolved. Well lighted and substantial buildings, the mill itself with such labor saving devices that it seems almost to have intelligence—well kept up—all small power for handling material supplied from tightly covered motors, driven from a large central station, only now and then a man visible, and the mill engines themselves housed in clean and neat engine rooms free from mill dust.

All spare blast furnace gases or other waste energy will be worked up into electrical form and perhaps a neighboring waterfall called on. The master mechanic will be an electrician as well as a machinist. Then competition will show us an example of the survival of the fittest.

The Q & C Shop Saw.

During recent years there has been a demand for power driven hack saws for cutting metal. Heretofore these machines have been provided with a gravity feed. The machine here illustrated



The Q & C Shop Saw.

—designed by the Q & C Company of Chicago and New York—has a positive automatic screw feed, and the speed can be instantly changed to accommodate hard or soft metal, large or small size. It will cut all kinds and sizes of metal up to 6 inches in diameter. The cutting speed is always the same. The stroke is horizontal, insuring perfectly square work, while the movable vise permits the entire length of the saw to be used. The machine is provided with an automatic stop. It is stated that this machine will do more work than the usual type, and that the saws will last much longer.

The Paris correspondent of the London *Economist* writes that the Customs Committee of the French Chamber have under examination a demand from owners of lead mines in France for a duty of 50 francs (\$10) per ton on lead, which is now on the free list. The production of lead in France is under 10,000 tons, and the consumption averages 90,000 tons yearly. The mine owners argue, however, that without the duty French mines must be closed and France be at the mercy of the foreigner for all the lead she requires.

The gunboats "Machias" and "Castine," which have been undergoing the process of lengthening in the Brooklyn Navy Yard, will be ready to be taken out of dry dock about July 1.

THE WEEK.

A bill which has recently been introduced in the Senate forbids the transportation of certain explosives and combustibles on steamers carrying passengers.

The Baltimore & Ohio Railroad has obtained a seven years' extension of its control of the Chesapeake & Ohio Canal, and will, it is reported, operate it by electricity.

The new city directory of Chicago gives an estimated population of 1,700,000 to the Windy City.

The promptness with which the monthly statements of the imports and exports of the United States are now issued by the Treasury Department is much appreciated by the business community. The promulgation of early information on this subject adds much to its value.

Captain Mahan has informed the Navy Department that the boilers of the "Chicago" have given out, and that it will be necessary for the vessel to remain a month or more at Antwerp for repairs. The "Chicago's" boilers have been in use since the vessel was launched. They will be replaced with new ones when she returns to the United States.

The Halifax, Nova Scotia, Board of Trade has memorialized the Canadian Government for a subsidy to enable the present telegraph cable from that port to Bermuda to be extended to Jamaica and other West Indian islands.

It is reported from Boston that 300 acres on the Mystic River have been bought by New York capitalists, and that substantial docks will be built along the whole distance of the water front—1½ miles—where there is now a depth of 28 feet at low tide and of 37 feet at high tide. It is further rumored that the Nova Scotia Coal Syndicate will make the new docks their central depot for the United States.

The result of the Derby race was received in New York by the United Press from the office of the Direct United States Cable Company just one second after it was filed in London.

Overhead electric wires in the crowded parts of Boston have been ordered down and to be placed underground. This order affects the street railway, telegraph, telephone and electric light companies, who are given until November next to complete the work.

It is reported that the New Hampshire Legislature will consider a proposal to build an electric road through the entire length of the State, beginning at Haverhill and terminating at Quebec, Canada.

Dr. Senner, the United States Commissioner of Immigration at the port of New York, reports that just as many people left the United States in the steerage as have arrived during the 11 months to May 31 last.

In order to avoid undue competition and to maintain prices, a combination will, it is said, be formed by nearly all the California fruit canners, under the name of the California Cannery Company.

United States Consul-General Ramon Williams, at Havana, reports to the State Department that a cablegram received there from Madrid states that the budget presented to the Spanish

Cortes by the Colonial Minister of Cuba, to go into force on July 1, imposes a temporary import duty of 24 per cent. on all articles of American production now exempted by Schedule A of the reciprocity agreement between Spain and the United States.

The members of the New York and New Jersey Bridge Commission, recently nominated by the President, held their initial meeting in the Army Building, New York, on Monday. The commission is composed of the following members: Major C. W. Raymond of the Corps of United States Engineers; Theodore Cooper and Prof. W. H. Burr of Columbia College, New York; George H. Morrison, Chicago, and G. Bouscaren, Cincinnati, Ohio. Major Raymond was elected president of the board and Mr. Cooper secretary. Charles Swan, secretary and treasurer of the Bridge Company, appeared before the board and presented the bridge plans, which will be taken into immediate consideration by the commission, whose first duty will be to determine the length of the new bridge's span.

Cost of Electricity.

The *Electrical World* states that in referring recently to some English data on the cost of generating electrical energy in central stations the conclusion was drawn that 6 cents would probably more nearly represent, exclusive of capital charges, the cost per horsepower hour of generating current in the central stations of this country than 4 cents, the figure usually quoted. Commenting upon the report of the Massachusetts Board of Gas and Electric Light Commissioners for 1893, our contemporary says:

Extensive official data and information are given of all the central stations in that State, and while not in a form to be directly applicable to calculations on the entire cost of generating current, yet they will enable approximate results to be arrived at. Almost all of the companies in the State do both arc and incandescent lighting, and some also supply current for motors, which renders it difficult to fix on a rate which will represent the average cost at which electrical energy is sold. The charge for incandescent lighting is almost uniformly 1 cent per 16 c.-p. lamp hour, and it is probable that, as usual, where flat rates are given, they are based upon the same figure; assuming that the prices received for arc current are also based upon incandescent charges, we have 12 cents as the approximate price received per hourly horse-power. This figure would be too high for motor rates, but as that assumed for arc light charges is probably too low in many instances on account of the "scaling down" of current for public arcs, we may assume 12 cents per hourly horse-power as the average received for all electrical energy sold, which, however, will include carbons for arcs and trimming. In looking over the result of the operation of the various stations for the year ending June 30, 1893, we find that of 60 companies 26 did not declare any dividend and six did not earn expenses. Of the 28 companies which paid dividends, 19 paid from 6 to 8½ per cent., the remaining nine paying from 5 to 1 per cent. It will be thus seen that over half of the central stations of Massachusetts found no profit in operating, or, under our assumption, it cost them 12 cents or more to generate an electrical horse-power.

Washington News.

(From our Regular Correspondent.)

WASHINGTON, D. C., June 26, 1894.

Projectiles.

It is somewhat extraordinary that while the subject of armor plate manufacture has called forth the ablest talent of the expert world, with results far beyond the achievements of experts in similar directions in the Old World, little or substantially no attention has been paid to the astonishing progress and results in the production of armor piercing projectiles. This was the idea conveyed by one of the most competent and experienced ordnance experts in the United States Navy in a very interesting conversation on projectiles. A few days ago there was a test at Indian Head of projectiles for the 13 inch breech loading rifles, representing Carpenter and Sterling Company shells. Both did their work magnificently. A 17-inch nickel steel plate was used. The Carpenter penetrated the 17 inches of steel and powerful backing and butt, and was recovered fully 500 yards away in condition to be fired again. The Sterling shell also went through the monster steel plate and buried itself deep in the bank.

As the commodore remarked, "If it were not for the tremendous force brought to bear by our modern high power guns and the production of a projectile capable of delivering at the point of impact the full ballistic force behind it our modern ships of war could sail anywhere and destroy seacoast cities within reach of their shot and shell in defiance of armies or seacoast defenses.

"In order to keep pace with this degree of progress in armor plate making it became necessary to produce a shell to match our own plates. The Department advertised for a projectile to comply with certain specifications for armor piercing projectiles for the United States Navy." You would be surprised to know the number of individuals and plants that undertook to produce a projectile. I shall not mention any names, because it would be unfair to the worthy men who attempted to accommodate the Government in its requirements. They were not rewarded for their efforts, which involved large expenditures. The Government only pays success, not patriotic effort. The result was that every one of these first responses were failures. Things therefore began to look serious. We were not afraid of our own plates, but we had to have a projectile to pierce the very best of our own, which would then be certain to play havoc with anything our foreign friends had.

"But you see there were many who tried it before Carpenter began, but he was the first to succeed, and he has kept succeeding ever since.

"We began on projectiles as recently as 1890. The Carpenter has been our main supply. The projectiles, we find, are very even in their physical qualities. The Sterling Steel Company of Pittsburgh are now making a very good shell. They have contracts for a great many, but the Carpenter Company have furnished the great bulk of those so far made for the Government.

"No, sir; never." This was the emphatic reply to an intimation that our Government previously relied upon a foreign projectile. "On that subject I will add that the Holtzer Firminy Creusot St.

Chamond projectiles were purchased by the United States Government for armor tests in order to produce an armor of our own which would render their shot practically useless. That we have done. These foreign shot were never used except experimentally. Every United States ship put in commission is equipped with her complement of projectiles of American manufacture. This is about 30 shells to a gun.

"We have been testing projectiles for four or five years and, strange to say, it never attracted attention until now. It is gratifying to feel that this apparently neglected branch of offensive naval progress has kept pace with our other achievements. The people are beginning to find it out and are evidently well satisfied with what we have done.

"The Johnson projectile is a cast one and is not expected to accomplish what a forged one will. But it is a cheap and effective one. It has been tried and accepted in its line, but the specifications require forged steel. There are possibilities in the Johnson projectile. It is excellent steel."

In an interesting talk through *The Iron Age* Mr. Carpenter gave some points in the line of his researches and results, and also gave some important information, particularly as to the requirements of shell capable of the very highest delivering and penetrating quality. Also the manufacture of the best projectile in the world out of American ores. This he has accomplished.

Mr. Carpenter is now studying over the creation of a steel which will resist his own shot. The company are also seriously contemplating the erection of works for the manufacture of armor plate of that quality of steel. If he and they accomplish this advance on existing triumphs another revolution in the manufacture of steel may be anticipated. The health of Mr. Carpenter, which was much impaired a few weeks ago, has greatly improved.

The Armor Trouble.

The Congressional investigating committee on the Carnegie armor plate irregularities are still sweltering through a great waste of time on the purely verbal information of the witnesses before them. The Navy Department is keeping low for the present until these people get through hearing themselves talk and the committee get tired of listening.

The Department established the irregularities existing in the Carnegie works in the manufacture of armor plates and fined them heavily. All that has transpired since was covered in the beginning. The statement made by one of these voluble witnesses that from 75 to 90 per cent. of the armor plates on the ships are defective a prominent expert pronounces false, and that the party making the assertion does not know what he is talking about. The Department will tear the testimony of these people into shreds when the time comes. Some of the words they get off appear on the surface to be very plausible, but the Department orders and changes in treatment, &c., which these workmen had no means of knowing about, will tell a different story.

The Tariff.

The tariff drags along with the thermometer at 90° to 100° on the Fahrenheit scale. The manufacturers can safely conclude that the schedule as adopted in the Senate will be concurred in and the disputed points will be au-

justed so that the whole bill will be completed practically as it stands so far as the industries are concerned.

The official sea trial of the "Minneapolis" week after next is inciting the deepest interest among our own naval experts and numerous inquiries are being made by the naval *attachés* of foreign Governments concerning the event. The advantage of the triple screw will then have been very conclusively demonstrated. When the design of the screws of the "Columbia" was made by Commodore Melville he did not anticipate an increase of efficiency in the propulsion from the use of three screws, but the trial of that sister ship to the "Minneapolis" showed that there is apparently a decided increase of economy.

This valuable point was obtained by making a comparison of the performances of the "New York" and the "Columbia," according to Froude's law. In the case of both ships the hulls were designed by the Bureau of Construction of the Navy Department, which has achieved the high reputation of turning out some of the finest hulls for speed in the world. The machinery in both ships was designed by the Bureau of Steam Engineering. The hulls and machinery of both ships were also built by the same firm.

The comparison indicated that the "Columbia" was driven with an increased economy of about 10 per cent. as compared with the "New York." At the Bureau of Steam Engineering the belief is expressed that the preliminary trial of the "Minneapolis" verifies this idea of increased economy.

It is claimed that the triple screws offer a solution of the problem which comes before the marine engineer of designing machinery which will be sufficiently powerful to drive the ship at full speed, and still work with fair economy at ordinary cruising speeds, when the power developed is only about one-eighth or one-tenth as much as at full power. The three screws are so adjusted that they can be readily disconnected and allowed to revolve freely, consequently when low powers, below 15 knots, are desired the two side propellers will be disconnected and allowed to revolve freely, and the ship will be driven by the center screw alone. This engine, it is claimed will work up to nearly full power with a fair degree of steam economy, whereas had all three screws been used or were the two propellers of a large twin screw ship used for the same power, each engine would be working so much below its full capacity that the steam economy would be very low indeed.

On the "Columbia," after going into commission, experiments were made running with one, two and three screws. It was demonstrated that working with the center screw alone, and the side propellers disconnected, there resulted a marked economy.

Canners in the Northwest estimate that the Columbia River salmon pack will fall short of that of last year by more than 100,000 cases. The short catch of this season is due to the recent floods on the river.

Out of the 104,734 immigrants landed at Ellis Island during the 12 months ending April 30, 1894, 2196 persons were returned to the countries from whence they came, under the immigration laws prohibiting the landing of contract laborers and those who are considered likely to become a burden on the public.

The Iron Age

New York, Thursday, June 28, 1894.

DAVID WILLIAMS, - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, - - EDITOR.
GEO. W. COPE, - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - HARDWARE EDITOR.
JOHN S. KING, - - BUSINESS MANAGER.

Applying Electric Motors.

In former articles we have discussed the prominent and important position attained by the electric motor in the driving of machinery in manufacturing establishments of all kinds. But there is a danger in this rapid and widespread introduction, threatened through a misapplication of the motor, arising from ignorance of its peculiar qualities. It is necessary to distinguish between cases where it will do the best work and others to which it will not be in the least adapted. The most progressive builders of the electric motor, those who have had most to do with its adoption and who have provided installations of the most varied character, have a just appreciation of this possible stumbling block and do not recommend the motor as a panacea for all the ills of power transmission. Yet, contrary to this, we find the motor now being applied to machines requiring large power and to others needing small power, to tools running continuously and to those which are idle half the time. That this indiscriminate application will eventually do harm, both to the motor and those using it, is a foregone conclusion.

The points that appear to govern the application of the motor are the power required, the time the machine is in operation and the number of times it is started and stopped during a given period. We have yet to hear of an instance where the motor has failed to give satisfaction when applied to a tool requiring, say, from 2 to 8 horsepower. In these cases the tools are not running during a large part of the time, and during this idleness there is no expenditure for power that is doing no useful work. The motor has also held its ground in cases where the machine is run continuously. Trouble will come when an attempt is made to apply the motor to a machine calling for only a fraction of a horse power and which is frequently started and stopped. By providing each small machine with an individual motor there is economy, since the expense ceases while the motor is at rest, but the increment thus saved is probably more than offset by the time lost in starting and stopping. This is due to the fact that the armature is quick running and that it requires an appreciable amount of time in picking up the load and in coming to a rest. Shifting a belt is quicker.

This difficulty is overcome at the new works of the C. & C. Electric Company

by grouping those tools which are run comparatively constantly and which individually require but little power. A motor is employed to drive a short line of shafting, from which the tools are operated by belts in the usual way. By this arrangement the load on the motor remains almost constant, and it therefore runs to the best advantage from an economical point of view, while the time of starting and stopping is reduced to a minimum. Even in cases of this description it is necessary, in order to get the best results, to group together those machines which are in constant use. By this we mean that it would be false economy to run a tool—a grindstone, for instance—from one end of this shaft, as it would be employed for too small a percentage of the time. At these works we find the grindstone run by its own motor, this being a good illustration of where a motor of small power can be used to advantage. In this grouping of small tools there is evidently a limit to the number that can be brought together and run most advantageously, but our practical experience at the present time is too limited to say just where this line should be drawn. Apparently the best results can only be reached by the combined effort and study of both the electrical and mechanical engineer. Neither can solve the problem by working independently of the other.

Mechanical Draft.

The history of positive mechanical draft as a substitute for erratic natural draft is extended and somewhat peculiar. Some 25 years since fan blowers were quite extensively sold for the purpose of blowing boiler fires, the blast at moderate pressure being introduced beneath the grates and serving to supplement the draft produced by the chimney. But the use of such means has by no means proportionally increased as the years have passed and steam plants have become more numerous.

For a time the greatest attention was given to and the best results obtained in the way of mechanical draft on shipboard. Various experiments were made at home and abroad on merchant and naval marine. In our own navy the blower was early introduced and has for years formed an important feature in the equipment of all new war ships. Generally arranged to be driven by direct connected engine, it has been utilized almost entirely for "forced" draft, so called in distinction from "induced" draft, where the hot gases are exhausted from the boiler furnace and are passed through the fan. As designed for forced blast the blower has been applied upon both the closed and the open stoke hold system. In the former, as the title indicates, the air is simply forced into an air tight stoke hold or fire room, from which it can escape only through the boiler

furnace to the stack. The open stoke hold makes necessary the discharge of the air from the fan into the ash pits, and to avoid the obvious results dampers must be so arranged that hot gases will not be blown out of the firing doors when they are opened.

While the adoption of mechanical draft on shipboard is by no means universal, yet it has received the most careful consideration and its employment has rapidly increased. It avoids high stacks and above all makes possible the maintenance, at comparatively small cost, of ample reserve capacity. For it requires but little increase in space and cost to introduce fans exceeding in their capacity by 50 per cent. or more that required for the rated capacity of the boilers. That is, the blowers run at full capacity may produce the same amount of steam by thus forcing the boilers that could otherwise be obtained only by actual capacity in the boilers to produce the quantity of steam under ordinary conditions of natural draft.

There is therefore no need of dependence upon climatic conditions, and the blower may in one instant be called upon to double the steaming power of the boiler. That under exactly similar conditions forced draft has shown marked economy over natural draft, there can be no question. Records exist of two steamers identical in every particular, except that one was fitted to be operated by natural, the other by forced draft. The steamer fitted with forced draft not only made even and steadier passages, but actually consumed 20 per cent. less fuel. Even a change of crews, to check against all conditions, showed that there was a positive saving of not less than 15 per cent.

The noticeable increase in speed (notwithstanding the relatively much greater power required) under forced draft in the tests of our own cruisers bears evidence to the advantages of this addition to the equipment. Nevertheless there are circumstances attending that may be worthy of serious consideration, and we are therefore not surprised to have Engineer-in-Chief Melville recommend stacks 100 feet higher or to learn that the latest of the Cunarders have no direct provisions for forced draft.

From forced draft attention has been turned to the avoidance of some of its difficulties, principal among which is the rapid deterioration of the boiler tubes. The International Navigation Company have for some time been experimenting along this line with the "Berlin," actually cutting off her stack and introducing suction fans so that the hot gases could be caused to pass either directly up the stack or through the fans, which would, of course, be operated at proper speed by their attached engines. That a radical change and induced draft is not altogether desirable is evident from the fact that while the "Southwark" and the "Kensington," built on the Clyde for this company, are each designed

for induced draft and each fitted with five large fans, the new boats being built by the Cramps for the same company are to use forced draft. The next ten years will doubtless definitely determine which of the two methods is most desirable, but the impartial judge must admit that at present the question is by no means settled.

On land conservatism still holds to the stack and chimney, but progress points toward the general adoption of induced draft in large steam plants. Mechanical draft is in itself of exceptional value where there are sudden and extreme variations in the amount of steam to be furnished. Nowhere is this more noticeable than in electric light and power stations. It is, then, but natural to find the question under most serious consideration in such places. Long ago the New York Steam Company installed a large fan for forced draft, and the same manner of application has been followed in the large sugar refineries and in many of the earlier electric plants.

The change to the induced method is noticeable in the case of such large plants as those of the Philadelphia Traction Company and of the Brooklyn City Railway. Each of these corporations has just installed a number of special exhaust fans with wheels 12 feet in diameter, eight in number in the former and two in the latter case. These two are, however, so arranged in connection with a massive chimney that they serve rather a supplementary than a primary purpose. But the Philadelphia Traction Company have altogether done away with a chimney, the fans are relied upon to create the necessary draft, and the gases are merely carried above the roof by a short stack. To guard against a shut-down from failure of any one of the fans they are arranged in pairs, every other one acting as a substitute.

Important among the advantages of induced draft in large plants is the assurance of sufficient continuous draft when economizers are used to utilize the heat of the waste gases. As a consequence the fans handle these gases at a temperature of only 300° to 350° instead of at 500° to 600°. It is evident that the former temperature would be insufficient to create under all conditions the necessary draft unless the chimney was of extraordinary height.

Furthermore, the regularity of the draft, independently of climatic conditions, presents a far better opportunity for the use of some system of mechanical stoking, which is important not only because of the resulting fuel economy, but also on account of the reduction in cost of attendance.

As regards the relative interest account and running expense of the necessary equipment of blowers and driving mechanism as compared with the interest account on a chimney of equal capacity, it is stated that the former arrangement is the cheaper under ordinary conditions. In a plant of any considerable size the extra ex-

pense for power to drive the fans will be approximately balanced by the saving in labor and fuel where the stoking arrangement is adopted and the economies properly installed to utilize, so far as possible, the waste heat of the gases.

In reality this application of mechanical draft is only in its infancy. Just what its future is to be will be determined by the success attending the continued operation of the plants quite recently installed, for it will be a matter not only of first cost, but also of running expense, depreciation and general convenience.

Western Foundrymen's Association.

The regular monthly meeting of the Western Foundrymen's Association was held on Wednesday evening, June 20, at 702 Western Union Building, Chicago, with President Geo. M. Sargent in the chair and B. M. Gardner secretary. Among those present were the following gentlemen: O. T. Stantial and L. W. Lukens of the Illinois Malleable Iron Company; J. L. Hecht and H. L. Hotchkiss of Wm. Deering & Co.; R. H. Brown and H. R. Gray, representing E. C. Greenlee; W. M. Wilson of the S. Obermayer Company; Wm. Francis of King & Andrews; S. T. Johnston of the Whiting Foundry Equipment Company; W. N. Moore of the Joliet Stove Works; G. M. Sargent of the Sargent Company; H. S. Vrooman of the Garden City Sand Company; E. W. Smith, James Carahan and F. B. Whitcomb.

The Executive Committee tendered the following report:

At the last meeting of the Executive Committee, held June 7, the secretary was instructed to present the following resolutions:

Resolved, That Article IV of the by-laws be amended to read as follows:

Article IV.—The dues of the association shall be an admission fee of \$5 and \$10 per annum, paid quarterly, in advance.

Resolved, That Article 1 of the by-laws be amended to read as follows:

Article I.—The regular meetings of the association shall be held bi-monthly, at such time and place as the Executive Committee may elect. Twelve members shall constitute a quorum.

Under the by laws these amendments must be acted upon at the next regular meeting of the association.

The secretary read a paper by Thomas D. West on "Round vs. Square Test Bars," as printed in the proceedings of the last meeting. This was discussed at some length. Finally it was moved and carried that a committee be appointed by the chair to investigate and report at the next meeting, and make experiments in the mean time. The chair appointed the following gentlemen to serve on the said committee: Messrs. O. T. Stantial, J. L. Hecht, William Francis, W. N. Moore, T. D. West, H. L. Hotchkiss. The meeting then adjourned.

Petroleum in large quantities is reported to have been discovered in Blair County, Pa., on the farm of A. B. Hicks, near Duncansville. Prospecting on the adjoining land is said to have shown that the supply of crude oil extends for a considerable distance around that region. Pittsburgh and Johnstown capitalists have leased some 40 farms in the vicinity and will conduct boring operations.

High Steel Buildings and Fire Risks.

An interesting interview with Hugh Bonner, chief of the Fire Department of New York City, published in a recent issue of the *Record and Guide*, contains the following suggestive remarks by that official on the fire risks incurred in the new many storied office buildings of iron and steel construction that are springing up in New York and other great cities:

All buildings erected in this city with the steel cage construction, either for office or mercantile purposes, I look upon as dangerous in case of fire, for the reason that when they pass beyond 125 feet in height they get beyond the control of our department. We have nothing up to date that will aid us in extinguishing fires above that point. We have looked all over the country for them, but up to the present time have not been able to obtain any appliances that will warrant us in saying that these buildings in their upper stories are within our control in case of fire. I think it is the duty of owners and architects to make provision, during the construction of these buildings, to provide against fire above the 125 foot limit, for stand pipes, water and fire appliances, that will give the department an auxiliary plant established on the premises with the necessary power in the cellar to be used in the event of a fire breaking out in the upper stories.

Unless some means of coping with fire such as these are adopted fires that occur in these upper stories will unquestionably burn out, while the firemen will be found standing on the street as much spectators as the general public and unable, in the conditions mentioned, to render any service. . . . In cases of buildings where some attempts have been made to provide against loss by fire we have found the appliances so provided useless, because differences in thread, &c., made connection with the department's apparatus impossible. Our experiences with fires in buildings of steel construction show that the effect of heat on iron posts and girders is most destructive. Our experience warrants us in saying that it merely requires sufficient combustibles to be set on fire in any of the high stories to cause the steel structure to crumble and fall through the building. There is no question in my mind but that this will be the result wherever there is sufficient combustible material within the building. For instance, a lawyer's office where a large quantity of papers and documents have been allowed to accumulate.

I do not think that cast iron has any advantages over steel in the case of fire; the first will crack and break under a reaction, say from water coming in contact with it, and steel will twist and warp under the action of the heat, so that one is as bad as the other. People who put up high buildings under the conditions now possible are taking the fire risk in their own hands.

I am of the opinion that we ought in New York to insist upon two requirements which are enforced in Chicago: That the owners of high buildings shall provide stand pipes and a force of water in the upper floors, and that elevator service should at all times be available to carry fire apparatus into the upper parts of the building. I think, too, that the pillars should be required to be covered with fire proof material, just as the girders are, and the amount of wood employed reduced

to the least possible. The auxiliary fire appliances should be put under the superintendence of the Fire Department, so as to insure their suitability and their fitness to be worked in connection with the department appliances.

OBITUARY.

WILLIAM H. HALLOCK.

William H. Hallock, son of the late Gerard Hallock, the latter at one time an owner and the editor of the *Journal of Commerce* newspaper, died in Jersey City on Sunday. William H. Hallock was 68 years and 10 months old. When Gerard Hallock, his father, conducted the *Journal of Commerce*, William, the son, was associated with him in a business capacity and had a small property interest in the plant. When he disposed of it, his newspaper labors comprised for a while the city editorship of the *Commercial Advertiser*. In 1882 he became connected with *The Iron Age* as an editorial writer. He was well versed in financial affairs and possessed a large fund of varied knowledge. He was an active member of the staff of *The Iron Age* until a year since, when a stroke of paralysis forced him to relinquish his work.

JOHN A. FREEMAN.

John A. Freeman, who has for a number of years past represented in Chicago the firm of Thomas Prosser & Sons of New York, agents for the Krupp Steel Works of Germany, died on Monday at the Presbyterian Hospital, Chicago. He had been suffering from a serious illness of some months' duration. Mr. Freeman was the American representative in Chicago of the Krupp exhibit at the World's Columbian Exposition, and devoted himself assiduously to the work of properly representing the merits of the company's productions before the American railway trade. He was taken ill very shortly after the close of the Exposition. Mr. Freeman was born in England and had attained the age of 62 years. He was an exceedingly pleasant gentleman, of affable manners, very well informed and had built up a wide circle of friends.

PERSONAL.

R. P. Rothwell of New York is one of the Executive Committee of the Southern Improvement, Land & Title Company, of which A. A. Arthur of Middlesborough fame is general manager.

Lieut. Joseph Beale, United States Navy, has been detailed for duty as inspector of steel at the Carnegie Steel Works, at Homestead, Pa.

Alfred Clifford, treasurer of the Consolidated Steel & Wire Company, St. Louis, Mo., will shortly leave for an extended tour of Europe.

Thomas A. Edison is reported to have sustained a painful injury last week at Ogden, N. J., where he has been busy for some time in developing his magnetic ore separator. He is now under medical treatment at his home in Orange, N. J.

An appraisalment has been made of the personal estate of the late Campbell B. Herron of Pittsburgh, the valuation shown being \$443,715. Of this amount \$160,000 is in stocks and bonds, \$162,000 in the firm of Spang, Chalfant &

Co., \$88,000 in the Spang Steel & Iron Company and \$7000 in cash.

W. C. Temple, who has had charge of the Pittsburgh office of the Babcock & Wilcox Company for a number of years, has resigned his position and will embark in a new enterprise in a short time.

Trade Publications.

THE ANNISTON PIPE & FOUNDRY COMPANY of Anniston, Ala., of which F. P. Hawkins of New York is Eastern agent, have issued a small pamphlet in which they explain how to order pipe and specials, and how they form their sockets so as to secure a better joint with less lead. They give tables of the weight of lead and yarn used in laying their cast water and gas pipe, print a table of standard weights, tables of standard flanging, and a table of the thickness of cast pipe for various pressures.

E. N. Sperry of Bridgeport, Conn., receiver of the Windsor Locks Steel Company of Windsor Locks, Conn., announces that the mill, site and plant are for sale. The mill is equipped with a 12-inch and 16 inch train, and a 10-inch train not set up. It has a water power derived from the Connecticut River Water Company.

The Cleveland Twist Drill Company, Cleveland, Ohio, have just shipped three of each size of their grip sockets to the Norfolk Navy Yard. This is the third navy yard equipped with these sockets.

A boycott declared by the American Railway Union against the Pullman Palace Car Company went into effect on Tuesday. The order is believed to affect every railroad in the United States which handles Pullman cars, and those that insist on running them will, it is stated, be subject to a strike if ordered by the Union officials. The Illinois Central was the first to suffer; all the switchmen in their freight yards having gone out on Tuesday evening.

It is reported that negotiations for the purchase of the interest of the Pennsylvania Steel Company in the Juragua mines of Cuba by the Bethlehem Iron Company have been closed, and that the latter company now own the entire property.

A correspondent of the *London Iron and Coal Trades Review* has had the opportunity of perusing a very interesting letter from Robert White, who is at the present time acting as engineer for the erection of extensive iron and steel works at Hankow, in China. Mr. White went out to Hankow a year or two ago to look after the general engineering details of this establishment. He had been employed at the West Cumberland Steel Works under G. J. Snelus. They have just completed what will be the first fully equipped establishment of its kind in Chinese territory, including blast furnaces, Bessemer works, puddling furnaces and a rolling mill. The general management of the enterprise is in the hands of M. Braive.

The wages of every employee of the Wheeling & Lake Erie Railroad, from the lowest position up to that of the president, have been raised 33½ per cent. by order of General Manager Blair. The company made a cut of 33½ per cent. in wages on April 27 during the strike of

the coal miners, and the promise was made at the time that the reduction would be restored when the strike was declared off.

An alleged attempt to form a consolidation of German and Austrian iron rolling mills is reported to have failed.

The Brooklyn & New York Ferry Company have placed a contract with the Roach shipyard, Chester, Pa., for the construction of two new ferry boats. The boats will each have a length of 167 feet over all, a beam of 36 feet 6 inches and a depth of 14 feet. They will be fitted with beam engines of the latest type. John B. Roach estimates the expenditure in wages by this contract at \$100,000.

Governor Greenhalge has vetoed the bill passed by the Massachusetts Legislature permitting the American Bell Telephone Company to increase their capital stock to \$50,000,000.

Robert E. Daniels, Youngstown, Ohio, inventor of the Daniels steel railroad tie, has recently been allowed a patent on a railroad tie anchor to be used in connection with the tie, especially on railroad curves, to prevent its movement either in lateral or tangent directions.

A large shipment of armor plate was made by the Bethlehem Iron Company to Philadelphia last week, consisting of 400 tons of 17-inch Harveyized armor for the barbette of the battle ship "Massachusetts," now in course of construction by the Cramps. A similar amount will be delivered this week. These consignments are the result of the successful ballistic tests at Indian Head last week.

MANUFACTURING.

Iron and Steel.

The Pennsylvania Tube Works, at Pittsburgh, are operating their plant full time in all departments, and have a large number of orders on hand.

The engineers and hookers-on at the Homestead Steel Works, Homestead, Pa., recently asked an increase in wages of 20 per cent., which was refused. The wages of these men were reduced this amount in January last.

The puddlers in the employ of the Harrisburg Rolling Mill Company, at Harrisburg, Pa., have been notified that on and after July 1 they will be paid \$2.75 per ton, their wages heretofore having been \$2.50 per ton.

Pickands, Mather & Co. of Cleveland, Ohio, have re-leased Fannie Furnace, at West Middlesex, Pa., and improvements are now under way preparatory to putting the stack in blast.

Nearly all departments of the Sligo Rolling Mill of Philips, Nimick & Co., at Pittsburgh, which was idle during the coal strike, have been put in operation.

The plant of the Hubbard Co-operative Iron Company, Hubbard, Ohio, manufacturers of muck bar, is idle in all departments, and will not resume operations until a regular supply of coal is assured.

The two Pioneer furnaces, at Birmingham, Ala., are idle.

No. 4 Furnace of the Pennsylvania Steel Company has started on Bessemer iron.

The Detroit Foundry & Equipment Company have moved their main office to 225 Dearborn street, Chicago, and have occupied their new works at Harvey, Ill. The name of the firm has been changed to Whiting Foundry Equipment Company, the main office being in Chicago.

The Lackawanna Iron & Steel Company are preparing to blow in the two Coleman furnaces, at Lebanon, Pa.

The large 96-inch shell cupola which has been added to the plant of the Radford Pipe & Foundry Company, Radford, Va., will be of Whiting patent make, manufactured by the Whiting Foundry Equipment Company, Chicago.

It is reported that T. C. Roberts of Philadelphia has the contract for the erection of the four blast furnaces for the new works of the Johnson Company, at Lorain, Ohio.

The L. K. Hirsch Company of Chicago have closed a contract with the Chicago Heights Land Association for the location and establishment of their factory at Chicago Heights. The factory buildings will be located at Seventeenth street and Wentworth avenue. The Chicago Heights Terminal Railway Company are constructing a side track to the property which will give them direct connections with the various railways now centering at Chicago Heights. The Michigan Central Railway Company are also putting in a spur track to the new works. They will manufacture railway spikes, nuts, bolts, washers and other railway supplies and appliances.

The puddling mill of the Elmira Iron & Steel Rolling mills, at Elmira, N. Y., has started up.

Cofrode & Saylor of Pottstown, Pa., have the contract for building a number of bridges on the Knoxville, Cumberland Gap & Louisville Railroad, and are also to put up the new buildings for the Ellis & Lessig nail works, at Pottstown.

The Birmingham Rolling Mill Company of Birmingham, Ala., have announced that the whole amount of wages earned will be paid in cash. For some months an arrangement has been in force by which the men accepted part payment in cash.

The Blandon Rolling Mill, at Blandon, Pa., has started up again.

The court has granted a decree under which the plant of the Wellman Iron & Steel Company will be sold. The creditors are given to July 5 to file objections.

The Howard-Harrison Iron Works, at Bessemer, Ala., cast iron pipe makers, will erect 100 coke ovens, and will substitute electricity for steam as their motive power.

The managers of the Catasauqua Mfg. Company, Catasauqua, Pa., have announced that the wages of all their rolling mill employees will be increased 5 per cent.

No. 4 furnace of the Bethlehem Iron Company, South Bethlehem, Pa., has blown in.

The Cleveland Rolling Mill Company, at Cleveland, expected to start its plant full on Monday.

The annual meeting of the stockholders of the Burden Iron Company was held recently and the following trustees elected: James A. Burden, I. Townsend Burden, John L. Arts, James A. Burden, Jr., and Nicholas J. Gable. The trustees met afterward and organized as follows: President, James A. Burden; general manager, John L. Arts; secretary, Nicholas J. Gable.

The McIntyre Iron Company of Albany, N. Y., were incorporated on June 26, with a capital of \$160,000, to operate in the Adirondack region and to manufacture steel and lumber, &c. The directors are Robert H. Robertson of New York City and James McNaughton and J. McNaughton Thompson of Albany.

Machinery.

The Toledo Machine & Tool Company, Toledo, Ohio, are operating their plant full time and have quite a number of orders on hand. Included in work now being turned out by this concern is an order for a special steel chain link machine for making steel chain links. The machine is automatic in its movements and it is claimed will have a capacity for making 40 links per minute. This firm have also contracted for a complete set of tools for stamping up sleigh bodies from sheet steel, which is said to be an entirely new departure.

The foundry of Armitage, Herschell & Co., North Tonawanda, N. Y., was slightly damaged by fire on June 22.

Application has been made for a charter of incorporation for the McGinniss-Smith Company of Pittsburgh, which concern propose to manufacture and sell all kinds of steam, hot water and air heating apparatus and ventilating appliances. Wm. K. McGinniss, Robert S. Smith, John A. Langdon and others are the incorporators. The new corporation will succeed the present firm of McGinniss, Smith & Co.

The Frank-Kneeland Machine Company of Pittsburgh have placed an order with

Manning, Maxwell & Moore of New York City for a three-motor electric traveling crane with an auxiliary hoist.

T. B. Rohrman's brass foundry, on Thirtieth street, Philadelphia, was visited by fire on June 23. The loss, which is estimated at \$2000, includes a large number of patterns.

Mining machines have recently been placed on trial in Leisenring Mine No. 2 of the H. C. Frick Coke Company, in the Connellsville region, and if their operation proves successful they will be placed in other mines. The machine diggers are used for driving entries.

The Westinghouse Electric & Mfg. Company, Pittsburgh, have declared a regular quarterly dividend of 1½ per cent. on the preferred stock, payable July 2.

The Prescott Steam Pump Company of Duluth will establish shops in Milwaukee, and propose to manufacture pumps on a large scale. The pump to be made is a new one, but is in successful use at several mines, including the Chandler and Norrie. Heretofore the company's work has been done at the Marinette Iron Works.

W. V. Rogers of Providence, R. I., of the Waterman Machine Company, has bought the shop of the Oakland Mfg. Company of Oakland, Maine.

It is reported that the National Lathe Tool Company of Philadelphia are negotiating for a branch at Cohoes, N. Y.

C. F. L. Meissner, Jr., C. A. Meissner and W. M. Spencer have incorporated the Southern Pump & Foundry Company of Birmingham, Ala.

The Novelty Iron Works, at Sioux City, Iowa, are building an addition to their works.

The molders of the Atwood Machine Company, at Stonington, Conn., are out on a strike.

The Vulcan Iron Works, Wilkes-Barre, Pa., have purchased the plant of the Allen machine shops, at Tamaqua, and will operate them as an annex to the main works.

Hardware.

W. C. Dewey of Palmer, Mass., has sold the wire mill property to Hermann Bauman and Jacob Mueller of New York City. The property consists of a large mill, 35 acres of land and a number of tenement houses and is valued at \$75,000. The new occupants of the plant will manufacture doors, sash, blinds, wire springs and other specialties. Work has been commenced and it is thought that the plant will be in full operation by July 1.

A new hardware concern at Troy, N. Y., are the Nielson Mfg. Company, who have been organized with a capital of \$10,000. They will manufacture novelties. Cornelius Fogarty of Troy and L. M. and Rasmus Nielson of Lansingburgh are interested in the company.

After ten years of inactivity arrangements have been made to start the Hingham Cordage Works, at Hingham, Mass., on July 1, with improved machinery. The works will give employment to about 100 persons.

The American Buckle & Cartridge Company, West Haven, Conn., have been sold to James Graham and Horatio Kelsey, who will start up the business about July 1.

The Warden Rake Factory, at Peacham, Vt., was burned on the 9th inst. Loss, \$2500; no insurance.

A five-story building is soon to be erected by the Burden Seamless Filled Wire Company of Providence, R. I. The structure will be 525 feet in length and 40 feet in width. A court in the center, 130 x 140 feet, will afford ventilation. The building will be a model of its kind and is to be constructed of steel and glass.

The Nashua Saddlery Hardware Company of Nashua, N. H., have purchased the plant and business of the Rome Malleable Iron Company, Rome, N. Y., and as soon as possible the plant will be brought to Nashua. The Nashua Saddlery Hardware Company will be reorganized in the near future.

The Thorne Fence Company of Marlborough, Chester County, Pa., are negotiating for a new site, probably at Chester, which has good manufacturing facilities.

The Samson Mfg. Company have been organized at Hartford, Conn., to manufacture hardware and machinery. The capital is \$10,000, all paid in. The directors of the company are C. F. Doebler, N. V. Perry, J. B. Knox, G. S. Penfield, D. Weir, L. B. Darling and Charles Darling.

The Union Implement Company have been organized, at Independence, Kan., with a capital stock of \$20,000. The incorporators are Wm. H. Sloan, Thomas J. Booth and Thomas C. Truman.

The bicycle manufacturing plant of Wilhelm & Co. of Reading, Pa., will soon be removed to Hamburg, Pa.

The Schultze Mfg. Company, Philadelphia, are making preparations to remove to Pottstown, Pa. The work of removing the machinery and other property of the company will commence this week. The company are manufacturers of locks and a number of specialties. A number of the directors and stockholders are Pottstown citizens.

The Anti Slip Horse Shoe Company of New York City have been incorporated to manufacture machinery for the making of horseshoes and to manufacture horseshoes and operate shops for shoeing horses. The capital of the company is \$100,000, and the directors are Emil Rinke, Frederick W. Bach, Adam E. Schatz, John H. Murphy and Albert E. Seifert.

Isaac Church, Toledo, Ohio, manufacturer of expansion bolts for fastening all kinds of structure to brick and stone work, has received a letter from the Supervising Architect of the Treasury Department, Washington, in which the merits of these bolts are referred to, and the statement made that should contractors for work on public buildings under the control of that Department propose their use they will be approved.

The Erie Specialty Mfg. Company, Erie, Pa., report an excellent trade during the present year. They are now running 24 hours a day on their cork pullers, corkscrews and specialties for the tobacco trade.

Clendenin Bros., 111 South Gay street, Baltimore, Md., advise us that they are very busy in copper nails, copper tacks, brass shoe nails and zinc nails, working full time with full complement of machines. They have added a new department to their plant—namely, the making of copper rivets and burrs. The requisite machinery has been put in and it is expected that the department will be running on full time within two or three weeks.

The Bridgeport Cash Register Company have been formed at Bridgeport, Conn., with a capital stock of \$2000. The stockholders are Orland Smith, Joseph Smith and Geo. A. Gould.

Miscellaneous.

The certificate of incorporation of the Machwirth Bros. Company was filed in the County Clerk's office at Buffalo, N. Y., recently. The incorporators are Adolph and Emil Machwirth, John L. Kronenberg, Otto Carl and John Phillips. The purpose of the company is to manufacture and deal in all kinds of steel and metal ceilings, galvanized iron cornices, &c.

The law firm of Arvine & Russell have made application to the Superior Court to have a receiver appointed for the Cheshire Brass Company of Cheshire. The action is brought to wind up the affairs of the concern and divide the assets among the stockholders.

The buildings of the new foundry facings mill that R. E. Wright, J. H. Pascoe, W. H. Deshler, J. B. Deshler, James Webb and L. H. Kinney are building at Lehigh, Pa., are well under way. The main building will be four stories high. The works will have a capacity of 2400 barrels or 300 tons a month.

The Rhode Island Locomotive Works have been mortgaged to the Rhode Island Hospital Trust Company for \$300,000.

The molders in the foundry of the J. Morton Poole Company, Wilmington, Del., have received notice that until further orders they will work only five days a week and eight hours a day. Heretofore the men have worked nine hours a day and a full week.

The Sterling White Lead Company, 531 Wood street, Pittsburgh, Pa., have in full operation their new works at New Kensington station, which have been in course of construction since March, 1893. The company state that they are not connected with the trust or with any other concern engaged in the manufacture of white lead. They will use the old Dutch method of corrosion, and intend to confine themselves to the manufacture of strictly pure white lead under the brand of Sterling.

The Iron and Metal Trades.

The Coke situation continues very puzzling. It was expected that the men would return to work early this week, but they have not done so. One of the leading operators is quoted as saying that there will be some serious disturbances before the majority of the plants are again at work. The largest producer seems to be making no efforts comparable in earnestness with those during a similar contingency in former years. It is reported that this same interest is trying to buy some Coke and is also in the market for Bessemer Pig. Yet the same interest is supplying Eastern concerns with the required quota of Coke.

From Pittsburgh comes the report that a Mahoning Valley Company have covered their Coke for the second half of the year at \$1 per ton. Contracts with other furnaces have certainly been closed at \$1.10.

It looks, therefore, as though the much heralded increase in cost of Bessemer Pig in the West is not so much of a factor for the future as has been made of it.

Under the circumstances buyers are not very aggressive. There has been some talk of a 10,000-ton sale of Bessemer Pig at Pittsburgh at \$11.50 for future delivery.

There is very little demand in the West for spot Steel, while for July and August delivery \$17 @ \$17.50 is named, the former quotation, however, carrying with it a strike clause in the contract. Rumor has it that Steel Billets from the Chicago district have sold for Cleveland delivery. Operators are acting conservatively, and are not offering the inducements to buyers which they would quickly do if the situation were fairly clear.

In the Wire trade the season is pretty well over, so that the demand for Rods and for Wire Billets will be light for some time to come. Rumors are afloat that a large German manufacturer has consigned a considerable quantity of Barb Wire to this country, to remain in bond in anticipation of the passage of the tariff bill, with its provision making Fencing Wire free.

In Finished Iron and Steel the markets are dull, the demand being very light. What good contracts for Structural Material are coming up in the East are usually captured by Pittsburgh works.

Charcoal Pig Iron has drifted into a frightful condition. We understand that Lake Superior Car Wheel is being offered at \$13.50, Buffalo, while Southern Iron has gone as low as \$15, delivered, Boston.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., June 28, 1894.

If there was any market at all it would probably be a bull market, but as there is virtually no market, one has to guess at its character. In many respects the outlook is favorable for higher prices, but first of all we must have buyers, which at present are conspicuous by their absence. After such a lengthy period of depression and retrenchment there ought to be some business, and with stocks so greatly reduced and prices below the present cost of production, surely there ought to be inducement enough to start a buying movement, but notwithstanding all theories to the contrary, consumers are as indifferent as ever and buy nothing that is not absolutely needed. The fact that prices do not advance is not because of large supplies, but because of light demand, and even that will soon be overcome unless there is a still further falling off in demand or an increase in supply, which is hardly likely until there is some prospect of a heavier business. Things are in such shape, however, that it would be impossible to make them much worse, while a very slight change for the better might start a very active movement. Cost of production is increasing, stocks of everything are almost at a point of absolute exhaustion, prices in many cases are at the very lowest on record, and yet there appears to be no desire to provide for future requirements, the feeling apparently being one of complete indifference.

Pig Iron.—In one sense the market is improving. The offerings are lighter, and while the demand is exceedingly small, the proportion between supply and demand favors the selling interests. There is plenty of Iron at quoted rates, but there is none to be had at concessions, and some brands are firmly held at outside figures. Averaging the market all around, we should say that while it is very dull, the undertone of firmness is greater than appears on the surface, which would be quickly shown on the slightest indication of a better demand. From a production of nearly 175,000 tons per week a year ago to less than 65,000 tons per week at this time is a tremendous falling off, and must have its effect after a while. Add to that the decline in prices and, what is still more important, the increasing cost of production, and it will be seen that all the elements are there for a quick change once it begins. At present things could hardly be more lifeless, but general quotations for Philadelphia and near by points remain about as follows:

Bessemer.....	\$13.00 @ \$13.50
Standard No. 1 Foundry X.....	12.50 @ 13.00
Standard No. 2 Foundry X.....	11.50 @ 12.00
No. 2 Plain.....	10.75 @ 11.00
No. 1 Soft.....	11.50 @ 11.75
No. 2 Soft.....	10.75 @ 11.00
Standard Gray Forge.....	10.50 @ 10.75
Ordinary.....	10.25 @ 10.50

Steel Billets.—There is no inquiry for new lots, although consumers need material, but they want old contracts cleaned up before going into anything new. There are a good many Billets due for delivery here at \$17.25 @ \$18, and consumers think if makers can take new orders at \$19.50 @ \$20 they ought to be able to finish up their old engagements. Some will probably do so with as little delay as possible, but on new business \$19.50 @ \$20 are pretty steady quotations, although as the Coal and Coke strike appears to be pretty well broken, it may be that the urgency for orders will carry prices to somewhat lower figures.

Finished Material.—Prices are not as firm as they were a week ago, although spot deliveries command pretty good figures. About 140¢ delivered, is asked for Tank Steel or Boat Plate, and while that figure is maintained for small lots, a little better can be done on 50 to 100 ton orders. The near approach of the summer holidays, the practical resumption of work by the fuel producers, and the probability of stronger competition for orders for Finished Material lead manufacturers to shade a trifle rather than risk the loss of a desirable sale. The amount of new business coming in is very trifling, large consumers, such as ship and bridge builders, doing little or nothing, neither is there anything worth naming in locomotive work or from the large engineering establishments. Boiler makers are doing a fairly active business, and there is something all the time in Structural work, but the aggregate is very disappointing, and if there were not so many mills shut down there would be a great scramble for orders. Prices, as we said before, are a little inclined to weaken, and it only needs the right kind of an order to secure a concession from the asking rates, which are about as follows:

Grooved Skelp.....	1.25¢ @	1.30¢
Standard Refined Bars.....	1.30¢ @	1.40¢
Medium quality.....	1.20¢ @	1.25¢
Tank Steel.....	1.35¢ @	1.45¢
Heavy Plates.....	1.30¢ @	1.40¢
Shell.....	1.50¢ @	1.60¢
Flange.....	1.60¢ @	1.80¢
Angles.....	1.40¢ @	1.50¢
Beams and Channels.....	1.50¢ @	1.60¢

Old Material.—There is some little business doing in Old Steel and Iron Rails, the former at \$9.50 @ \$10, the latter at \$11 @ \$11.50, delivered, and Old Car Wheels at \$9.50 @ \$10.50, delivered. No. 1 Wrought Scrap would also sell at about \$10, but holders ask more money, as there is some prospect of a demand soon as the mills get started up. General asking prices, delivered, are about as follows:

Heavy Melting Steel.....	\$9.50 @	\$10.00
Light Melting Steel.....	7.50 @	8.00
No. 1 Wrought Scrap.....	10.50 @	11.00
Machinery Cast.....	9.50 @	10.00
Wrought Turnings.....	8.00 @	8.50
Cast Borings.....	6.00 @	6.50
Old Iron Rails.....	11.00 @	11.50
Old Car Wheels.....	9.50 @	10.00

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, June 27, 1894.

It is something to be able to say that business is no worse than it has been. This statement is even possible of a little amendment on the right side, and business is really somewhat better. There are lines in which some falling off is reported, but on the whole a distinct gain is perceptible in the character of the trade.

Pig Iron.—Sales of local Coke Iron have been fully up to previous weeks. Agricultural implement manufacturers are placing their season contracts for Pig Iron freely, and there are plenty of others who have not yet covered their requirements. Prices might be expected to advance under these circumstances, but furnace companies are still sharply competing for business and this keeps values down to their old range. Southern freight rates are to be advanced 25¢ on the 1st and quotations are changed accordingly. A fair demand is noted for soft grades for quick shipment, but there is little inquiry for deliveries extending over any

considerable period. Consumers seem to be deterred somewhat by the advance in freight rates, and are possibly waiting to see whether the advance will hold. Some of the large Southern companies have withdrawn from the market completely and are not making quotations on any grades. Lake Superior Charcoal is quiet and offers are made by some sellers at prices showing quite a reduction on our quotations, which are for standard brands. The market for Charcoal Iron among malleable manufacturers is more than ever falling into the control of the local Coke producers, who make a special grade known as Malleable Bessemer. Quotations are given as follows for cash:

Lake Superior Charcoal.....	\$15.00 @ \$15.50
Local Coke Foundry, No. 1...	11.25 @ 11.50
Local Coke Foundry, No. 2...	10.50 @ 11.00
Local Coke Foundry, No. 3...	10.00 @ 10.50
Local Scotch.....	11.50 @ 11.75
Ohio Strong Softeners No. 1...	13.00 @ 13.50
Southern Silvery, No. 1..... @
Southern Silvery, No. 2..... @
Southern Coke, No. 2.....	10.50 @ 10.75
Southern Coke, No. 3.....	10.25 @ 10.50
Southern, No. 1 Soft.....	10.50 @ 10.75
Southern, No. 2 Soft.....	10.25 @ 10.50
Tennessee Charcoal, No. 1..... @
Tennessee Charcoal, No. 2..... @
Alabama Car Wheel.....	17.50 @ 18.00
Jackson County Silvery.....	15.00 @ 16.00
Coke Bessemer.....	11.25 @ 11.50
Malleable Bessemer.....	11.75 @ 12.00
Other Ohio Silvery.....	14.00 @ 14.50

Bars.—Season contracts for Bar Iron are under consideration to some extent, but the views of buyers and sellers are far apart and negotiations are proceeding slowly. Considerable miscellaneous business was closed during the week, and some fairly large orders were included. A feature was an effort by large buyers to secure Iron for immediate shipments in consequence of their failure to receive regular shipments from mills which had been placed on very low contracts some time since. The Springfield Iron Company started their mill full in every department on Monday, with plenty of orders on their books. There had been a shut down for about six weeks for lack of fuel. Other mills in this vicinity which have been running steadily are, however, closing down to wait for higher prices and better times. A Bar mill on the Mississippi River failed last week, but an effort is being made to reorganize. Prices of Bar Iron for mill shipment are a little firmer and may now be quoted at 1.05¢ @ 1.10¢, Chicago. The Valley mills are asking higher prices, their general figure being 1¢ at mill for Bar Iron and 1.15¢ for Soft Steel Bars. Jobbers quote small lots from stock at 1.30¢ upward for Bar Iron and 1.50¢ upward for Soft Steel Bars. They have enjoyed a considerably larger business for the past week.

Structural Material.—Nothing new has developed under this head except a little higher price for Angles, on which manufacturers seem to think they should get an advance of \$1 @ \$2 per ton. A few building contracts are coming up, but they will probably be deferred until later in the season before being placed. Quotations on mill shipments, Chicago delivery, are as follows: Beams and Channels, 1.50¢; Tees, 1.65¢; Angles, 1.45¢; Universal Plates, 1.45¢. Small lots from stock sell at 1.80¢ @ 1.90¢ for Beams, 1.50¢ @ 1.60¢ for Angles, and 1.70¢ @ 1.80¢ for Tees.

Plates.—The whole business shows considerable improvement. Some contracts of good size were placed for early delivery. Competition on Fire Box Steel has latterly been very keen, and one of the largest manufacturers has reduced his price to about the same figures as prevail on Flange Steel. Jobbers are enjoying an increased demand

for large and small lots from stock. Mill shipments, Chicago delivery, are quoted as follows: Tank Steel, 1.45¢ @ 1.55¢; Flange Steel, 1.65¢ @ 2.10¢; Fire Box, 1.65¢ @ 5¢. Store prices are as follows: Iron or Steel Sheets, Nos. 10 to 14, 1.80¢ @ 1.90¢; Tank Steel, 1.65¢ @ 1.85¢; Flange Steel, 2.10¢ @ 2.35¢; Boiler Tubes, in carloads, 70 and 75 % off.

Sheets.—A lively movement is reported in Black Sheets, but sales are still confined to a limited number of mills. Galvanized Iron is rather quiet but firm, with manufacturers not disposed to sell far ahead. Mill shipments are quoted as follows, Chicago delivery: No. 27, Common Black Sheet Iron, 2.35¢ @ 2.40¢; Steel Sheets, 2.45¢ @ 2.50¢; Galvanized Sheets, 75 and 10 % off; Sheet Copper, 14¢ to large buyers.

Merchant Steel.—Some season contracts are being placed, but some of the largest consumers are holding off in the hope that they may do better in the fall. General business is quiet. We quote mill shipments, Chicago delivery: Smooth Finished Machinery and Tire, 1.70¢ @ 1.80¢; Open Hearth Spring Steel, 1.85¢ @ 1.90¢; Bessemer Machinery, 1.55¢ @ 1.60¢; Bessemer Tire, 1.45¢ @ 1.50¢; Ordinary Tool Steel, 6¢ @ 7¢; Specials, 12¢ and upward.

Billets and Rods.—Numerous inquiries for Billets are being received for points in Pittsburgh territory, and some sales have been made. The aggregate business entered for the week was about 4000 tons. Quotations are continued at \$18.25 @ \$18.50. The shutting down of Wire mills generally on the 1st prox. cuts off the demand for Rods, and the Joliet Rod mill will therefore shut down to wait until consumers again come into the market. Makers continue to quote \$25 as a bottom price.

Rail and Track Supplies.—Manufacturers have had a good run of small orders and also report some large inquiries come in, a part of which they are confident will materialize in business for this locality. Standard Rails continue to be quoted at \$25 @ \$27. Steel Splice Bars are now 1.25¢ @ 1.35¢; Track Bolts, with Nuts, 2.10¢ @ 2.15¢; Spikes, 1.75¢ @ 1.80¢; Links and Pins, 1.65¢ @ 1.70¢.

Old Rails and Car Wheels.—No transactions have transpired in Old Iron Rails and quotations are nominally continued at \$10, Chicago. Old Steel Rails for melting have sold in considerable quantity during the week at prices ranging from \$6.55 to \$6.75. Long lengths are quoted up to 1.50¢, according to selection. Old Car Wheels are quiet with quotations continued at \$10 @ \$10.50.

Scrap.—Cheap Scrap, such as borings and turnings, is now getting scarce, on account of the continued dullness among the machine shops. At the same time there are no indications of an advance in price. Wrought Scrap is very plentiful, but dealers appear to be inclined to hold it for better prices and are not sacrificing their stock. Dealers quote the following selling prices per net ton: Railroad Forge, \$9; Dealers' Forge, \$8 @ \$8.50; No. 1 Mill, \$6.50; Pipes and Flues, \$6; Heavy Cast, \$7 @ \$7.50; Stove Plate, \$5 @ \$5.50; Fish Plates, \$10; Horseshoes, \$9; Mixed Steel, gross ton, \$5.50.

Metals.—Lake Copper is lower and carload lots are now quoted at 9½¢. Casting Copper is a little weaker and

sells down to 9¢. Spelter is quiet at 3.20¢ @ 3.25¢ for prime Western. Pig Lead is quoted at 3.15¢ @ 3.20¢, with very little business done recently.

The Eagle Iron Company of Spring Valley, Wis., have appointed Dyke V. Keedy sales agent for the sale of their Pig Iron, with headquarters in Chicago. The company manufacture Charcoal Pig Iron exclusively. Mr. Keedy is a Pig Iron salesman of long experience in the Northwestern Iron trade and enjoys a wide circle of friends, who will undoubtedly be pleased to hear of his new connection.

St. Louis.

(By Telegraph.)

Office of The Iron Age,
Bank of Commerce Building,
St. Louis, June 27, 1894.

Pig Iron.—The local demand for Pig Iron has dwindled to the smallest proportions. Stove foundries are nearly closed down and many foundries are only working half time, thus reducing the melting capacity nearly if not 50 per cent. Deliveries are also being delayed, and while the local agents have their books fairly well filled with orders they find it quite difficult to close their accounts on account of the holding back of deliveries. In the absence of any demand prices are well maintained, and No. 2 Foundry and No. 1 Soft Irons are particularly strong on account of a steadily increasing scarcity in these grades. Furnacemen are looking for a dull period during the next 60 days, and if prices maintain the present level an improvement is expected with the advent of fall trade. We quote as follows for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry.....	\$11.00 @ \$11.25
Southern Coke, No. 2 Foundry.....	10.00 @ 10.25
Southern Coke, No. 3 Foundry.....	9.75 @ 10.00
Gray Forge.....	9.25 @ 9.50
Southern Car Wheel.....	16.50 @ 17.00
Ohio Softeners.....	14.25 @ 14.75

Bar Iron.—Mills are not running very full, but on the contrary are making their arrangements for the annual shut down for repairs on July 1. Jobbers' stocks are not in very good shape, and any improvement in the demand would find most of them unable to fill orders promptly. Prices are unchanged as follows: Carload lots from mill command 1.15¢; jobbers ask 1.30¢ @ 1.35¢.

Barb Wire.—A fair demand is reported at unchanged prices. Mills quote \$1.90 for Painted in carload lots, with 40¢ per hundredweight additional for Galvanized.

Wire Nails.—While there is no great amount of business doing, prices seem to be well maintained. Mills quote \$1.20 and in some cases \$1.25 in carload lots. Production is curtailed and stocks are not unusually heavy.

Rails and Track Supplies.—The demand for Old Iron Rails has fallen off, principally through the shutting down of mills. Latest sales were made at \$10 f.o.b. St. Louis. Steel Rails are dull and \$26 @ \$27 continues the current quotation. Track Supplies are quoted as follows: Steel Rails, \$26.50 @ \$27; Splice Bars, 1.35¢; Spikes, 1.75¢; Bolts, Square Nuts, 2¢; with Hexagon Nuts, 2.10¢; Steel Links and Pins, 1.65¢; Iron, 1.75¢.

Pig Lead.—The market has eased off somewhat since our last report, and several carload lots have changed hands

at 4.10¢. At the close to-day this price was bid, but sellers are holding off and quote, 3.12½¢, the best they will do. The demand is only fair.

Spelter.—We continue to quote 8.20¢, at which price sales are being made. The demand is not heavy, however, and the midsummer dullness may result in a weakening in this metal. Stocks are not heavy, and bids of less than 3.20¢ do not find any sellers.

Pittsburgh.

(By Mail.)

Office of *The Iron Age*, Hamilton Building, }
Pittsburgh, June 28, 1894. }

The most unfavorable feature in the whole situation in the Iron and Steel trades at this time is the light demand for Finished Material, and which shows no immediate signs of getting larger. Buyers naturally expect that a general resumption of operations among mills that closed for want of fuel will cause prices to sag, and they will hold off placing orders as long as they can. The hot weather is interfering with the starting up of some of the mills, while others have not been able as yet to get enough Coal in stock to allow them to resume. While most of the mills, or all of them, have some old orders to clean up, there must be a very large increase in demand before steady work all around is assured. Summed up, the situation is not as encouraging as it might be, but there are plenty in the trade who believe that the last half of the year will show improvement over the first half, both in demand and prices.

Pig Iron—The market is extremely quiet, there being very little doing, either in Spot Iron or for forward delivery. The supply of Coke is gradually increasing, and several furnaces here and in the Valleys expect to start up within a week or ten days. The belief exists that Bessemer Iron for July will bring from 50¢ to \$1 per ton more than for later deliveries, and furnace-men are quoting on this basis. Some of the Valley furnaces are holding stiff for \$11, at furnace, for July, August and September, while others are shading this price, though not very much. Forge Iron continues in light demand and is ruling at \$10, Pittsburgh, although this price might be shaded slightly under favorable conditions. Foundry Iron is almost entirely neglected; consumers who heretofore bought in 100 and 200 ton lots now place their orders for a carload or two. In spite of the light demand prices are rather firm, there being little disposition to shade in order to get business. For deliveries during the next two or three months we quote as follows:

Neutral Gray Forge.....	@ \$10.00, cash.
All-Ors Mill.....	\$9.75 @ 10.00 "
No. 1 Foundry.....	11.50 @ 11.75 "
No. 2 Foundry.....	10.75 @ 11.00 "
Bessemer.....	11.50 @ 11.75 "

We note a sale of 1000 tons of Gray Forge at a shade under \$10, Pittsburgh.

Billets—Some inquiries for Steel for forward delivery are in the market, but the views of buyers and sellers as to prices are so far apart that little has been done. Mills continue to ask \$17.50 and higher for Steel for the next two or three months, but buyers state that the prices ruling for Finished Material will not permit them to place orders at the above prices and they are not buying. It is not expected that there will be any serious labor troubles among the Steel mills this year. In the Pittsburgh dis-

trict but one firm is union, and while this concern has asked concessions it is not improbable an amicable settlement will be reached. In the Wheeling district two concerns recognize the Amalgamated Association and no serious trouble is anticipated. Unless a much heavier demand for Finished Materials develops, it is feared the capacity of the Steel mills will be in excess of the demand and this may result in prices receding to some extent.

Ferromanganese.—We repeat quotations of \$53 for domestic, delivered at buyer's mill.

Beams and Channels—A leading Pittsburgh mill will close on the last day of this month pending settlement of the wage scale and also to install some improved machinery which will displace a considerable number of hands. The demand for Beams and Channels is large, while considerable bridge work is in sight. Pittsburgh has secured contracts for some 2000 tons of Beams for Eastern shipment. We continue to quote: Beams and Channels, up to 15 inches, 1.25¢ @ 1.35¢, according to order; Angles and Universal Plates, 1.20¢ @ 1.25¢; Tees, 1.35¢ @ 1.40¢.

Plates—Mills that are in position to guarantee prompt shipments are getting considerable business, and at outside quotations. Several good sized contracts from bridge builders have recently been placed and others are in sight. Prices are firm and less cutting is being done than for some time past. We quote as follows: Tank, 1.25¢ @ 1.30¢; Flange, 1.45¢ @ 1.60¢ according to order; Shell, 1.40¢ @ 1.50¢; Marine, 1.60¢ @ 1.70¢; Fire Box, 2¢ @ 4¢, according to quality.

Merchant Steel.—The demand is light and mills are showing more disposition to shade prices than heretofore. We quote as follows: Bessemer Machinery, 1.35¢; Open Hearth Machinery, 1.45¢ @ 1.55¢; Open Hearth Spring, 1.65¢ @ 1.70¢; Cold Drawn Steel Shafting, 2.40¢, base; Tool Steel, 5¢ @ 7¢ for ordinary grades; extra grades, 11¢ @ 13¢.

Muck Bars.—We note a sale of 200 tons of standard grade at \$10.75, delivered at buyer's mill.

Bars.—A somewhat better demand is reported, but prices do not show any improvement. The Valley mills have been delayed to some extent in starting up by the hot weather. There will be no trouble between the Valley mills and the Amalgamated Association this year over the wage scale, and no conference will be held. The scale contains the 60 day clause and will be signed by the Valley mills as formulated at the Cleveland convention. We quote Iron Bars at 1.05¢ @ 1.10¢ in carload lots, and Steel Bars at 1.10¢ @ 1.15¢, with the usual extras prevailing.

Sheets.—There is a possibility of trouble over the wage scale, but it is expected an amicable settlement will be reached within a short time. Most of the season contracts have been placed, but there is a continued good demand for small lots. Prices are on the basis of 2.35¢ for No. 27 Iron and 2.40¢ @ 2.45¢ for Steel. There is a good demand for Galvanized Sheets with discounts ruling at 75 and 10 % for small lots.

Wire Rods.—The market is bare of sales, but some inquiries are reported and some business is expected to develop within a week or two. The Rod mill of the Pittsburgh Wire Company started up yesterday.

Barb Wire.—The demand is very light and some of the mills are preparing to shut down for repairs and stock taking. We quote Four-Point Galvanized at \$2.05 @ \$2.10, in carload lots. Plain Wire is ruling at \$1.40.

Wire Nails.—Trade is very quiet and a number of the mills will close down at the end of this week, while others will run at half capacity or less until the demand improves. We continue to quote at \$1.10, Pittsburgh, for the usual averages in carload lots, and makers state that this price is not being shaded. We quote Cut Nails at 90¢ in carload lots for the usual averages.

Skelp Iron and Steel.—No new conditions are reported, and we continue quotations of last week, as follows: Grooved Steel Skelp, 1.15¢ @ 1.20¢; Sheared Steel Skelp, 1.25¢ @ 1.30¢; Grooved Iron Skelp, 1.25¢ @ 1.35¢; Sheared Iron Skelp, 1.40¢ @ 1.45¢.

Pipes and Tubes.—The demand for Merchant sizes is reported as considerably improved, with prices ruling about 10 % higher than those prevailing several months ago. An inquiry for 8 miles of 8-inch for a water works at McDonald, Pa., is in the market and is expected to be placed this week.

Connellsville Coke.—The situation in the Connellsville region continues to show improvement, and one prominent concern expect to have all their ovens in operation by the end of this week. The output of Coke shows gains every day, and it is the general impression that July 1 will see the strike, which has lasted about 13 weeks, at an end. As yet little has been done in the direction of contracts for last half of the year, but the information comes from a reliable source that a Mahoning Valley furnace interest has closed a contract for Coke for the last half of the year at \$1 per ton of 2000 lb, f.o.b. at ovens.

Birmingham.

BIRMINGHAM, June 25, 1894.

The situation here is still far from satisfactory. The local committee of the miners has not yet decided to call off the strike, and hence all the mines are not yet working full time. At a number of smaller mines the old men have partially resumed work. Most of the mining, however, is done by negroes and many of the white miners are leaving the State. Whether exclusively negro mining will prove financially successful in the long run must be proven by actual experience. The Coal so far mined is not yet equal in quality to that mined before the strike. The Sloss furnaces are still idle. No. 2 at the city plant is relined and greatly improved. It is ready to go in blast, but waiting on the Coal miners for a regular Coke supply. No. 3 at the North Birmingham was banked at the beginning of the strike, and is reported to resume operations inside of two weeks. Coke ovens are being fired up for this purpose. This plant will be equipped with Uehling pyrometers for each furnace in blast. The Pennsylvania Coal, Iron & Railroad Company have five furnaces in blast, Little Bell at Bessemer having gone in last week. They have had sufficient Coke supply all through the strike by drawing on Tracy City and other sources, together with their convict Coke. The Blue Creek mines are running full with mainly negro miners. The Pioneer Mining & Mfg. Company have put both furnaces out of blast. Dirty Coal was one of the reasons for this. They are relin-

ing. The Woodward Iron Company are running both furnaces and have been free from trouble in their Coal mining department. The much discussed steel plant at Bessemer is still in rather embryotic state, though apparently forging steadily ahead in the right direction, due to the indomitable energy of the leading heads. Their financial questions seem gradually to solve themselves to their satisfaction.

Bessemer City Council has agreed to buy water works for \$125,000 under conditions, one being the building of the steel plant.

Pig Iron.—Sales have been quite brisk and shipments exceeded the make largely. There are but few grades to be had. One large concern have nothing but No. 1 Foundry on hand and ten days' shipments will clean them up. Nos. 1 and 2 Soft are very scarce, as are in fact all the lower grades. Higher prices are looked for inside of 60 days. Quotations range No. 1 Foundry, \$3; No. 2, \$7 @ \$7.25; No. 3, \$6.75; Gray Forge, \$6.50.

Rails and Railway Supplies.—Considerable inquiry has developed in this class of material. G. C. Ball & Co. report inquiries this week for over 1200 tons of from 30 to 60 lb Rails. A contract for 1300 tons of 60-lb Rails has been closed by this firm in Atlanta, price not stated. The inquiries are from Alabama and Florida points, and indicate an encouraging awakening of development in these States.

Machinery.—The practical settlement of the sugar schedules in Washington has had a very important bearing on this district. The Howard-Harrison Pipe Works and the Birmingham Machine & Foundry Company are prepared for this class of work, and are now filled up with large orders for the balance of the year. The sugar question has a strong bearing on the South industrially, as it has assumed proportions where not only the Southern sugar planter is interested, but also manufacturers of New Orleans, St. Louis and Birmingham. The amount of Iron used and manufactured into sugar machinery has become a very important item in the Iron business of the South, and adverse legislation would have been severely felt here. The Birmingham Iron Works have been reorganized into the Birmingham Engine Works, Joseph Hardy, president; A. Baldwin, Jr., vice-president; Wm. Hardy, general manager, secretary-treasurer. Their specialty is engines, high speed and hoisting. The Southern Pump & Mfg. Company have been organized out of the old Southern Pump Company, Chas. J. L. Meissner, president; C. A. Meissner, treasurer. Their specialty is water packed pumps requiring no leather packing. Their favorite territory is Texas, Mississippi, Arkansas, Kansas, &c., where deep well pumps requiring minimum attention and repairs are in demand. The Howard Harrison Pipe Works of Bessemer have begun work on the 7000-ton order of 36-inch Pipe for Rochester, N. Y.

Louisville.

LOUISVILLE, KY., June 23, 1894.

Stocks of Iron continue to decrease at furnaces, until now at many there is but one or two days' supply. Furnacemen feel that present prices cannot continue long and that an advance in the near future will be shown for Southern Irons. Certain grades can scarcely be furnished at all, especially Silvers and Softs. The fact that many of the Ohio and

Central Pennsylvania furnaces that have been on Soft Irons are changing to Bessemer will strengthen the market in that territory for Southern grades. There is very little demand on the part of Car Wheel companies, and Charcoal Irons are extremely low, with scarcely any demand. Parties desiring investments consider the present market a wise one to invest on, and there are inquiries for round lots. We quote, for cash, cars Louisville:

Southern Coke, No. 1 Foundry.	\$10.25 @ \$10.50
Southern Coke, No. 2 Foundry.	8.75 @ 9.25
Southern Coke, No. 3 Foundry.	8.50 @ 8.75
Southern Coke, Gray Forge.	8.00 @ 8.50
Southern Charcoal, No. 1 Foundry.	12.50 @ 13.50
Southern Car Wheel.	15.00 @ 15.50

Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fifth and Main Sts. }
CINCINNATI, June 27, 1894.

Supplies of Foundry Coke Iron are so nearly exhausted in the South that any one who has any Iron to sell can readily obtain an advance of 25¢ per ton for No. 1 Soft, No. 2 and No. 3. The demand while not large exceeds the offerings, and quotations are not much better than nominal. Instead of an increase in production there appears to be less Iron offered now than ever before. Those who have Iron profess to believe that they will be able to obtain much higher prices. Certain it is that there is more urgency than ever before to have Iron delivered on contracts long past due, and in fact in most cases such demands cannot be complied with. This throws current consumers on the market to buy what they must have. The demand, therefore, especially for No. 1 Soft and No. 2 Soft, is far in advance of the ability of the furnaces to supply. There is some inquiry for round lots of Foundry Iron, but as no one wishes to contract ahead no prices are made. There are moderate jobbing sales being made in this district, but there is scarcely anything doing for the East. The market is in a demoralized condition. There is no movement in Charcoal Iron. Quotations are as follows:

Foundry.

Southern Coke, No. 1.	\$10.25 @ \$10.50
Southern Coke, No. 2.	9.50 @ 9.75
Southern Coke, No. 3.	9.25 @ 9.5
Ohio Soft Stone Coal, No. 1.	14.50 @ 15.5
Ohio Soft Stone Coal, No. 2.	14.00 @ 14.50
Lake Superior Coke, No. 1.	12.50 @ 13.00
Lake Superior Coke, No. 2.	11.50 @ 12.00
Hanging Rock Charcoal, No. 1.	17.00 @ 17.50
Hanging Rock Charcoal, No. 2.	16.50 @ 17.00
Tennessee Charcoal, No. 1.	13.00 @ 13.50
Tennessee Charcoal, No. 2.	12.00 @ 12.50

Car Wheel and Malleable Irons.

Standard Southern Car Wheel	16.25 @ 17.00
Lake Superior Car Wheel and Malleable.	16.25 @ 16.75

Forge.

Gray Forge.	8.75 @ 9.00
Mottled Coke.	8.50 @ 8.75

The will of Robert Patterson of the firm of Hughes & Patterson, rolling mill proprietors, of Philadelphia, who died in April, 1893, has just been adjudicated. Besides a number of bequests to religious and charitable objects, Mr. Patterson left the income on \$150,000 to Ursinus College, and \$10,000 to pay off the incumbrances upon the properties of the college.

W. J. Rainey, the well-known coke operator of the Connellsville region, is quoted as saying that in the future he will not employ any more Huns, but will replace them with negroes as fast as possible.

Metal Market.

Pig Tin.—On prices of Straits Tin there has been a decline during the week under review of about 0.35¢ per lb, or to the basis of 19.30¢ net cash for 5-ton lots for delivery this month, July or August. Comparatively little speculative business was done at the decline, and sales to interior trade and consumers have not been above a very ordinary average for this season of the year. Slow trade here and lower prices in London, along with the large visible supply, account in a good measure for the decline. On the Metal Exchange the sale was recorded of 25 tons at 19.30¢ for July delivery.

Copper.—The market has remained extremely quiet. Hardly enough business was done to fairly determine market value. Being well sold up, Lake Superior Ingot is generally quoted at 9½¢, but stray lots might be purchased at a trifle less. The cheaper classes of Copper in the place of which many consumers took Lake product on the late large deal are, however, to be had at some concession. The range is 8½¢ @ 8¼¢ for Electrolytic and 8½¢ @ 8¼¢ for common Casting stock.

Pig Lead.—Common Western for prompt delivery and for shipment this month and next sold at 3.37½¢. In isolated cases 3.40¢ was paid. Deliveries are somewhat backward, and that fact tends to strengthen the belief in late reports of comparatively moderate production. The proposed reduction in duty on foreign prompts the offering of domestic at 3.35¢ or a shade less for August and later delivery, so that upon the whole the market is momentarily a peculiar one.

Spelter.—Sales have been moderate. The demand has shown very little spirit, although probably better than during the fortnight preceding the week under review. A certain amount of reserve in the offering was shown, the inference from which is that late reports of modified production have some basis. Still good brands of common Western may be secured at 3.50¢, laid down here or at common point.

Antimony.—Dealings have been moderate and prices are barely steady, with 10¢ @ 10½¢ quoted for Cookson's, 8½¢ for Balle's, and 9½¢ @ 9½¢ for LX on the spot.

Nickel.—The quotations remain at 45¢ @ 50¢ for fair sized lots.

Tin Plates.—In general character business was like that of the preceding week—spasmodic and barely up to the average for the season. Prices remain almost stationary, but with rather soft undertone on spot goods, the quotations for which are as follows: Charcoal: Melyn grade, IC, \$6.25; do., Melyn grade, Crosses, \$7.75; do., Allaway grade, IC, \$5.40; do., Allaway grade, Crosses, \$6.45; do., Grange grade, IC, \$5.50; do., Grange grade, Crosses, \$6.60; do., Terne, M F., 14 x 20, \$7.25; do., M F., 20 x 28, \$14.50; do., Worcester, 14 x 20, \$5.70; do., 20 x 28, \$11; Alin grade, 14 x 20, \$5.15; do., 20 x 28, \$10 @ \$10.25; D. R. D. grade, 14 x 20, \$4.90; do., 20 x 28, \$9.70. IC Coke: Penlan grade, \$5; do., J B grade, 14 x 20, full weight, \$5.15; do., 100 lb, \$4.75; do., 95 lb, \$4.62½; do., 90 lb, \$4.55. IC Bessemer Steel, Coke finish: 14 x 20, full weight, \$5.12½; do., 100 lb, \$4.70 @ \$4.75; do., 95 lb, \$4.60; do., 90 lb, \$4.50. IC Bessemer Steel, Coke finish, sq., \$5.30. IC Siemens Steel, Coke finish,

sq., \$5.45. Wasters: S. T. P. grade, 14 x 20, \$4.60; do., S. T. P. grade, 20 x 28, \$9; do., Albearne grade, 14 x 20, \$4.90.

Financial.

The most important and interesting event of the past week has been the exceedingly heavy export movement of gold and the action of the banks toward replenishing the Treasury reserve after the drain caused by withdrawals of the metal for shipment abroad. The total amount of gold exported during the week ending last Saturday was \$7,750,000, a sum which broke previous records during the current year. The calls on the Treasury for this purpose reduced the Government gold reserve to \$62,000,000; but the associated banks of New York City, in accordance with the provisional arrangement referred to in our last week's review, reimbursed the Treasury for last week's losses to the extent of about \$6,000,000 in gold. This had the effect of easing the burden of the Treasury Department to some extent, but as no definite agreement has been come to by the banks to furnish any further sums to replace future withdrawals, there is no guarantee that this source of relief will continue available to the Treasury Department. The banks are, in fact, said to be unwilling to do more in the line of assistance just now, until it is apparent that the Department is taking some definite steps toward safeguarding its own funds from further depletion. So far, only \$1,000,000 have been shipped during the current week, although \$1,500,000 more are likely to go by a later steamer. These amounts will undoubtedly come out of the Treasury. Meanwhile the gradual shrinkage of the gold reserve is apparently regarded with equanimity by the Treasury officials, who are quoted as expressing their belief that the worst of the outflow movement is over, and that by degrees the reserve can be built up to a point which will remove the present anxiety. How this feat is to be accomplished in the face of a steady decline in customs and internal revenue receipts is not stated.

President Cleveland's semi-official utterance in regard to the financial situation, published in the form of an interview on Tuesday morning, was received by some as calculated to arouse uneasiness and apprehension, notwithstanding its reassuring tone, as showing that the President considered the situation sufficiently grave to necessitate a public expression of confidence from himself. These persons thought that there was no need for such a statement. Others, however, believed it to be a wise move and likely to have the effect of quieting any uneasiness that might exist. Probably this latter view is held by the majority; and Mr. Cleveland's opinion appears to have had just this effect in the European markets, judging by the revived buying movement of American securities for foreign account which followed on its publication abroad. Yet the statement reveals nothing of the intentions of the administration, and the gist of the whole utterance is found in the following "begging-the-question" statement: "The elements which make up our actual situation do not justify any apprehension, and the administration still adheres to its pledge and determination to protect our national credit at all hazards and to keep the quality of our money equal to the best so far as the limits of executive power permit."

There are a few signs of business improvement over last week, but they are still faint and confined mainly to the reports of the renewed buying interest which are published in the various market reports. Prices of a number of products, too, show a hardening tendency. Wheat has risen nearly 5¢ a bushel since June 1, and prices of corn, coffee, cotton and pork have all advanced during the current month. Should Congress soon pass the tariff bill, and so remove uncertainty in that direction, there is little doubt but that improvement would quickly develop. The prospects of this consummation seem brighter than they have appeared for a long time, and for this the public longs and waits. Until the tariff question is absolutely settled, however, no general betterment in trade can be hoped for. There have been so many disappointments in the matter that nothing short of entire assurance will suffice to encourage returning confidence. The volume of domestic trade, measured by bank clearings, exhibited last week about the same amount as that of the previous week. Failures, too, as calculated by Dun's agency, show a decrease, being 214 last week, against 273 in the corresponding week of last year. The aggregate liabilities display a proportionate falling off.

Saturday's bank statement shows that the flow of surplus money from the interior continues in large volume. The banks gained \$767,000 in cash during the week, and the loss in specie was only \$1,400,000, notwithstanding the heavy gold exports. Of course the statement did not reflect the large sums contributed to the Treasury at the end of the week to replace gold shipments. These will come into the current week's statement. A favorable feature of the statement was an expansion of \$2,550,000 in loans. The surplus reserve above legal requirements is down \$21,200, the excess now standing at \$76,355 375.

The money market remains unchanged, with call loans nominally at 1%. Owing to the cheapness of call loans the demand for time money shows no expansion, and banks and trust companies experience increasing difficulty in finding employment for their surplus funds, which they are willing to place on good ordinary collateral at easy rates. Rates for time loans continue at 1% for 30 days, 1½% for 60 days, 2% for 90 days to four months and 2½% for five months. The supply of good commercial paper is not large, consequently the market remains quiet. Rates are quoted as follows: Choice acceptances, 2½%; prime 60 and 90 day indorsed bills receivable, 2½% @ 3%; four-month commission house names, 3%; prime single names, 3½% @ 4%, and good four and six month singles, 4½% @ 5½%.

Stocks have been very dull during the week under review. Little business has been done in the market outside "professional" trading. Even the industrials, which were the most active stocks last week, have been more or less torpid. Sugar especially showing a marked reaction after its recent gymnastics. The declaration by the Vanderbilt companies of their usual dividend on Friday gave some slight encouragement to the market. Atchison, however, on that day managed to break all its previous records by falling more than a point to 4½, showing that the reorganization plan mentioned last week was not received with any degree of warmth. Shares of the bankrupt railroads generally followed suit on Satur-

day by selling down to their lowest recorded prices. The stock market this week has been dull and heavy, and prices are lower generally throughout the list, except for St. Paul and the Granger group, which closed strong and higher. The following list shows the extreme fluctuations in the more active stocks during the week under review, with closing prices on June 27:

	High-est.	Low-est.	Closing June 27.
Am. Sugar Ref.....	101½	96½	101½
Atchison, T. & S. F.....	6½	4½	5½
Chicago Gas.....	80	77½	78½
Chic., B. & Q.....	77½	76½	77½
Chic., Mil. & St. Paul....	60½	57½	60½
Distilling & Cattle Fdg..	24½	23	23½
Gen. Electric.....	36½	34½	36½
Louisville & Nashville....	45½	43½	45½
Missouri Pacific.....	27½	25	27
National Lead, Common.	39½	37	38½
New York Central.....	98½	97½	98
N. Y., L. E. & Western.	13½	11½	13½
Northern Pacific, Pfd..	14½	12½	14½
Philadelphia & Reading..	16½	14½	15½
U. S. Cordage.....	25½	21½	22½
Union Pacific.....	11½	9	11½
Western Union.....	84	82½	83½

Railroad bonds, which were dull and lower at the close of last week, have recovered somewhat since the beginning of this week, and close firmer and higher in several lines. European purchasing has been on a liberal scale, which accounts for the renewed strength of these securities. State and municipal mortgages are firm and active. Government bonds have been firm and active. Closing quotations were as follows:

	Bid.	Asked.
2's, 1892, registered.....	96	.....
4's, registered.....	113	113½
4's, coupon.....	114½	115
5's, coupon.....	117½	118½
5's, registered.....	118	118½

The market for sterling exchange, which held dull and steady for the greater part of the week, eased off somewhat on Tuesday, owing to the light demand from remitters. It was said that last week's large gold movement accounted for most of the bills secured against July interest, and that these requirements having been filled the demand had slackened and gold exports would decrease. Actual business was done on Wednesday at \$4.87½ @ \$4.87½ for 60 days, \$4.88½ @ \$4.88½ at demand, \$4.88½ @ \$4.89 for cables and \$4.86½ for commercial.

Domestic exchange on New York is quoted as follows: New Orleans, commercial 100 premium, bank 150 premium; Charleston, buying par, selling ½ premium; San Francisco, sight 10, telegraph 15 premium; Savannah, buying par, selling ½ premium; Chicago, 70 premium; St. Louis, 90 premium; Boston, 5 @ 10 premium.

Bar silver is quoted at 28½ pence per ounce in London and in New York at 62½ cents. Exports of the metal to Europe during the week have exceeded 500,000 ounces.

The board of directors of the Philadelphia Natural Gas Company of Pittsburgh last week declared the quarterly dividend of 1 per cent., payable July 2. This is a reduction of ½ per cent. in the quarterly dividend rate and makes the stock yield 4 per cent. instead of 6 per cent. per annum. In explanation of the reduction in the dividend it is stated that the company desire to make extended improvements for the purpose of getting up the supply of gas. It was thought best by the directors to reduce dividends rather than to borrow money to carry on the improvements.

New York.

Office of The Iron Age, 98-102 Reade street, }
NEW YORK, June 27, 1894. }

Pig Iron.—Local agents report only a very moderate demand and complain that low prices continue to be made by some of the furnaces. Charcoal Iron has been selling at very low prices lately. Sales in this vicinity of Lake Superior Car Wheel Iron have been made on the basis of \$13.50, Buffalo, while Southern Car Wheel has been offered at \$15, delivered at Boston. We note below the result of the auction sale. There is still some demand for spot Bessemer. Ohio Irons are weaker. We quote standard brands \$12.50 @ \$13 for No. 1; \$11.25 @ \$12 for No. 2, at tidewater. Southern Iron, same delivery, \$11.50 @ \$12.25 for No. 1; \$10.50 @ \$11 for No. 2; \$10 @ \$10.25 for No. 3; \$10.25 @ \$10.75 for No. 2 Soft, and \$10.50 @ \$11 for No. 1 Soft. Foundry No. 4 (Foundry Forge) is \$9.75 @ \$10.25.

Ferromanganese.—We quote nominally \$52.50 @ \$54 for 80 % foreign Ferromanganese.

Billets and Rods.—We note a moderate sale of spot Billets at equivalent to \$19.50, at tidewater. Wire Rods continue nominally \$27 @ \$27.50, tidewater.

Steel Rails.—The Eastern market is exceedingly dull at nominally \$24.80, tidewater, for standard sections. There has been some demand for light sections for export. Some of the sellers of light sections complain that they are losing what business there is by asking the moderate usual advance for light over standard sections. Steel Rails fit to relay are selling at \$16 @ \$16.50. The demand for Girder Rails is light.

Track Material.—We quote as follows for small lots: Spikes, 1.50¢ @ 1.70¢; Fish Plates, 1.20¢ @ 1.40¢; Track Bolts, Square Nuts, 2¢ @ 2.10¢, and Hexagon Nuts, 2.10¢ @ 2.30¢, delivered.

Manufactured Iron and Steel.—The Clearing Housebuilding has been closed at an exceedingly low figure, the quantity involved being about 700 tons. Business in Plates and Bars is exceedingly light. An effort is being made to introduce Birmingham, Ala., Bar Iron into this market. The mill has an established reputation in other markets. On Cotton Ties freights will advance after the 1st prox. We quote: Beams up to 15-inch, 1.40¢ @ 1.50¢ for round lots; Angles, 1.30¢ @ 1.35¢; Universal Mill Plates, 1.25¢ @ 1.35¢; Tees, 1.50¢ @ 1.60¢; Channels, 1.40¢ @ 1.50¢, on dock. Steel Plates are 1.35¢ @ 1.40¢ for Tank; 1.45¢ @ 1.50¢ for Shell; 1.60¢ @ 1.65¢ for Flange, and 1.75¢ @ 2¢ for Fire Box, and 2¢ @ 2.25¢ for Locomotive Fire Box, on dock; Refined Bars are 1.20¢ @ 1.9¢, on dock, and Common 1.10¢ @ 1.20¢; Soft Steel Bars are 1.20¢ @ 1.30¢; Scrap Axles are quotable at 1.35¢ @ 1.50¢, delivered; Steel Axles, 1.35¢ @ 1.50¢, and Links and Pins, 1.40¢ @ 1.60¢; Steel Hoops, 1.40¢ @ 1.50¢, delivered; Cotton Ties, 70¢ @ 75¢ @ 45-lb bundle, tidewater; Machinery Steel, 1.20¢ @ 1.40¢; Toe Calk, 1.75¢ @ 1.90¢, and Sleigh Shoe, 1.60¢ @ 1.75¢, delivered.

On Tuesday Pig Iron warrants were sold at public auction at the New York Metal Exchange. They realized the following prices:

At yard.
100 tons Lone Star, No. 2 Charcoal. \$7.00
200 tons Lone Star, No. 2 Charcoal. 8.00

100 tons Lone Star, No. 2 Charcoal.	8.25
100 tons Lone Star, No. 2 Charcoal.	8.50
100 tons Lone Star, No. 3 Charcoal.	8.00
100 tons Etowah, No. 2 Foundry....	7.50
200 tons Etowah, No. 3 Foundry....	7.00
100 tons Etowah, No. 3 Foundry....	7.25

The Lone Star is in yard at Jefferson, Texas, freight to New York \$5, and the Etowah at Gladsden, Ala., freight \$3.50 per ton to New York.

British Metal Market.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, June 27, 1894.

Pig Tin prices have dropped to the extent of £1. 12/6 on prompts and £1. 17/6 on three months' futures. For a time the market received a certain measure of support from a few bull operators who purchased prompts, but little was done in futures until Monday, when the backwardation, due to the reports of the Americans preparing for repeal of duty, aroused some interest. The American holdings here are understood to be large. Consumers have purchased sparingly this week. At the close the market was very unsettled, with quotations at £68. 15/ @ £69 for prompts and £68. 10/ @ £68. 15/ for three months' futures.

Copper has undergone little change in price, but prices are still feverish, and the market shows uncertain tone. There has been more realizing by tired holders and selling for bear account. Some leading firms absorbed considerable metal, but the selling from other quarters offset the effect of that movement later on. Business with consumers has been better, and more sales for India account were also made. Closing prices were £38 for Merchant Bar, prompt delivery, £38. 5/ for do., three months' futures, and £41 for best selected English.

The demand for Coke Tin Plate has been moderately active, with good orders from 'Frisco at somewhat enhanced prices. Buyers and sellers are still so far apart that business is chiefly of a retail character. Ternes have been in good demand, but prices show no further change. Swansea prices are as follows:

Bessemer Cokes, 14 x 20.....	@ 10/3
Siemens Cokes, 14 x 20.....	@ 10/6
Ternes, double box.....	@ 19/
Charcoals.....	13/ @ 15/

Inquiry for Black Plates from the United States is quieter, but prices are very firm owing to the fact that makers are full with orders and unable to deliver promptly.

Pig Lead has found only moderate sale, but prices are slightly firmer, with £9. 2/6 quoted for Soft Spanish.

Spelter is steady at £15. 10/ @ £15. 15/ for Soft Spanish, but sells rather slowly.

Pig Iron warrants have ruled irregularly, finally settling off to 41/8 @ 41/9 for Scotch, 35/3 for Cleveland and 44/8 for Hematite. At the close there was a slight improvement.

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HARDWARE.

Condition of Trade.

THE CLOSING DAYS of June are probably among the most quiet of the year, and, as is to be expected, the volume of business is light. Travelers for the most part are at home, some of them making arrangements to re-enter the field early next month. Merchants are as a rule buying only such goods as they require, and as a consequence both manufacturers and jobbers report business very light. Many of the factories are preparing to shut down for a time, as usual, in order to enable them to make repairs and improvements and get in shape for fall business. There is little to report in prices, the market being in substantially the same condition as for some time past. Collections are referred to as fair, though in some sections there is more or less complaint.

Chicago.

(By Telegraph.)

Trade in Shelf Hardware is not so active. Midsummer dullness appears to have made its appearance, and packing rooms are considerably quieter than they have been. No special changes have occurred in prices and no features of any special importance are coming up. Roofing plates are now in good supply, as importers have recently increased their stock considerably. Trade in Heavy Hardware has been good the whole of this month, but the past week's business was remarkably active. Small consumers have been buying very freely; orders have not been large, but numerous. The demand for wagon and carriage stock is steady and much better than usual, and many houses are behind their orders. It is worthy of note that in this line the demand is running to a better grade of material than ever before. Consumers are asking for better stock and superior finish and manufacturers and jobbers are obliged to comply with their wishes.

St. Louis.

(By Telegraph.)

The local Hardware jobbing houses report a fair trade and look for a dull market for the next 60 days. Prices are firming up in some lines, and this in the absence of any special demand is considered encouraging. Wire Nails, which have been sold as low as \$1.10, are now quoted at \$1.25, and this price is considered an inside quotation. Vacation time is now here, and there is a

general let up in the demand for nearly all lines of goods. Retailers continue to buy in moderate quantities, so much so that jobbers are now carrying larger stocks than they have before done. The competition for trade is so keen that the country dealer is not compelled to anticipate his wants months ahead, as he has been in the habit of doing in the past. He sends in his weekly order, instead, which is as much sought after as was his former monthly order. Collections are very satisfactory.

Notes on Prices.

Wire Nails.—The market in the matter of price is not entirely even. Some manufacturers are holding firmly at \$1.10 for carload lots at mill, but others are making \$1.05, and it is rumored that in some cases the latter figure has been slightly shaded. The demand is only moderate and the mills are beginning to close down. Small lots from store in New York are held at \$1.25 to \$1.30.

Chicago by Telegraph.—Manufacturers report trade quiet during the past week. A few orders have been influenced by the prospects of a general shut down of the factories on July 1, but merchants are not at all disposed to buy freely. Prices are maintained at \$1.20 to \$1.25, Chicago, for factory lots, while small lots are selling at \$1.25 from stock.

Cut Nails.—There has been little change in the Cut Nail market during the past few weeks, and it is still represented by the quotation of 95¢ to \$1 for carload lots, delivered on dock in New York, but during the past week the former figure has been made a little more freely than heretofore. Some relatively low quotations have been made by Western mills who are desirous of placing goods in Eastern territory, and this competition has the effect of weakening the market somewhat. Small lots from store in New York are held regularly at \$1.10 to \$1.15.

Chicago by Telegraph.—Prices on factory shipments have been increased to 95 cents on a 55-cent average from the local mill. The manufacturers are doing a good business and not complaining of its volume, but Eastern manufacturers appear to be getting absolutely nothing in this field. The Lakeside mill is still shut down, but the company expect to start at an early day, as soon as a supply of coal can be obtained. Small lots from stock are quoted by jobbers at \$1.15.

Barb Wire.—As usual at this season, the demand is light and diminishing. Prices, which of late have been a little uneven, show signs of increasing weakness, and slightly lower quotations are made. It is probable that attractive orders could be placed at lower prices than have recently ruled. We quote for Four-Point Galvanized, delivered at the points named, as follows: Pittsburgh, \$2.05 to \$2.10; Cleveland, \$2.10 to \$2.15; Cincinnati or Allentown, \$2.25 to \$2.30; Chicago or New York, \$2.25 to \$2.30.

Chicago, by Telegraph.—Manufacturers have lately been accumulating stock, as they are now soliciting orders with guarantees of prompt shipments. While trade is light, there has been no change in prices. Factories will generally shut down July 1, and consequently it is expected that they will be able to maintain quotations for some time. Jobbers quote small lots of Galvanized at \$2.35 to \$2.40, while carloads are selling at \$2.20 to \$2.25.

Automatic Screw Driver.—This article was described in our last issue. It is put on the market by the Millers Falls Company, Millers Falls, Mass., and 93 Reade street, New York. It is sold from the following list, which is subject to a discount to the trade of 25 per cent.:

	Per dozen.
No. 11, with three Screw Driver Bits.....	\$15.00
No. 12, with eight Drill Points and three Screw Driver Bits.....	21.00

Enterprise Grater No. 93—This article was described in our last issue. It is put on the market by the Enterprise Mfg. Company of Pennsylvania, Philadelphia, Pa., for whom J. C. McCarty & Co. are agents, 97 Chambers street, New York. The Grater is sold at \$3 list, subject to a discount to the trade of 20 per cent.

Rabbeth Door Bolt—The Rabbeth Ventilating Door Bolt, manufactured by Ranson Hardware Company, Burlington, Vt., and illustrated in *The Iron Age* June 14, 1894, is sold at a discount of 50 and 10 per cent. from the following list:

	Per dozen.
Regular size.....	\$22
Extra heavy.....	32

Juice Extractor No. 21.—Enterprise Mfg. Company of Pennsylvania, Philadelphia, Pa., for whom J. C. McCarty & Co., 97 Chambers street, New York, are agents, are putting this article on the market. The Extractor was illustrated in our last issue. It is sold to the trade at \$2.50 list, subject to a discount of 20 per cent.

Monitor Aluminum Juice Extractor.—This Extractor was described in *The Iron Age*, June 21. It is manufactured by the Sterling Aluminum Company, 1195 Fulton street, Brooklyn, who are selling it to the trade at \$5 per dozen, net. The company are selling Glass Extractors of the same pattern at 85 cents per dozen, net. Referring to the use of aluminum in lemon juice extractors, the company advise us that they have recently received a letter from Prof. James W. Richards of Lehigh University, in which he states that aluminum is a better material than glass for this purpose.

Ideal Dampers.—An illustrated description of these goods, which are a recent addition to the manufactures of the Stover Mfg. Company, Freeport, Ill., was given in our issue of 14th inst. These Dampers are sold to the trade at a discount of 50 per cent. from the following list:

4	4½	5	5½	6	7	inch.
\$1.00	\$1.13	\$1.25	\$1.38	\$1.50	\$2.00	per doz.

Glass.—The demand for Glass during the past week has not shown the activity anticipated by the manufacturers. Buyers are pursuing a conservative policy and purchasing only for immediate requirements, as the outlook does not justify anticipating the future. Glass factories not already closed down will discontinue operations on June 30 for the summer, and the opinion is expressed that the accumulated stock will be insufficient to supply the demand until fall. It is estimated that if the tariff bill passes in its present form foreign Window Glass can be imported at a discount of 88 per cent., and that the foreign article would then become a sharp competitor of American Glass. The general tendency of the market is still firm, Pittsburgh factory quotation being 85 per cent. discount. The demand for American Plate Glass is reported as encouraging at 70 and 10 per cent. discount.

Chattanooga Hardware Company.

THE REGULAR annual meeting of the Carter-Magill Hardware Company, Chattanooga, Tenn., was held there June 18. The annual reports, which were carefully scrutinized by the shareholders, were thought to be very satisfactory considering the conditions under which business has been done for the last 12 months. The contemplated amendment to the charter, changing the name of the corporation to the Chattanooga Hardware Company, was formally accepted and made effective at once. Five directors were elected to serve for the ensuing year, and after the adjournment of the shareholders' meeting the new Board of Directors met and organized by electing the following officers from their number: R. L. Watkins, president; A. M. Johnson, vice-president; John L. Davies, treasurer; Douglas Everett, secretary.

Echoes of the Richmond Meeting.

IN THE FOLLOWING COLUMNS we refer to a number of matters which were prominently brought to the attention of the trade at the recent convention at Richmond, which evidently has awakened an unusual interest among manufacturers and merchants.

IT IS EVIDENT that the recent meeting of the Southern Hardware jobbers at Richmond has been regarded with more interest than any similar gathering for a long time. This is owing not only to the extensive territory and large interests represented by the jobbers constituting the association, but also to the fact that a number of questions of recognized importance were discussed by them in a careful, broad and painstaking manner. In these questions the jobbing trade and the retail trade to a very considerable extent are interested, and the papers which we have published have doubtless had attentive perusal in all parts of the country. In addition to this the fact that manufacturers were to so large an extent represented in the gathering was a feature of special interest, indicating as it does an effort on the part of manufacturers and jobbers to get nearer together than they have been for some time.

Among the different questions discussed, those relating to payment of traveling salesmen, the formation of local associations, more businesslike methods in regard to credits, and the terms on which goods are sold have apparently been regarded with the most interest.

Jobbers and Manufacturers.

The following letter from a well-known Hardwareman refers apparently to the spirit which characterized the conferences between manufacturers and the Southern jobbers at their recent gathering in Richmond. It is written evidently from the standpoint of the retailer, who finds his trade encroached upon by both the manufacturers and the jobbers who sell direct to consumers:

The jobbers, as they call themselves, are a little more conciliatory toward the manufacturers than of old, but our experience with them is that they are as much at fault as the manufacturers, for they solicit trade everywhere and never let up. Every school district is canvassed, and they are constantly breaking prices; so between the manufacturers and jobbers the retailer gets hard squeezed. The retailer has just as good a ground for complaint against the jobber as the jobber has against the manufacturer.

Credits.

We are in receipt of a number of advices in regard to the position of the trade in the matter of credits, some of which are given below in the letters from the trade, which are reproduced. A wholesale merchant who served an apprenticeship of five years on the road as a salesman writes us:

Before I went on the road I had considerable experience at the desk and very early discovered how very indefinite

were the agreements about payments. I had not been traveling long—perhaps it was my third or fourth trip—when I saw that the one person in the whole machinery of business who was most interested in seeing that bills were paid promptly was the traveling man.

This was for two reasons: if the customer was too far behind the house did not want to add to his account, and on the other hand a cautious dealer did not want to order because of this. Some of my good men could not pay me any part of their account and because of this would not give me an order. Others, whose ability was not first-class, I refused to sell because they could give me nothing on the already due account.

I saw that it was decidedly to my interest to have as little of this trouble as possible, and I began to push collections to the best of my ability. If a man could not pay me I asked him to set a day when he would pay, impressing him that I had to make report to the house, and that his promise would be noticed and a remittance expected.

It was so much to my own interest to have the account put into better shape that I left no opening by which he could think he might crawl out of his promise if he chose, and I would say, "If you are not absolutely sure of being able to pay on that day don't say you will, but change it."

The bookkeeper was instructed to take care of these promises, and if the customers failed to meet them to write to them promptly and also report to me. When I received such notice I at once wrote my customer that the house had reported to me his failure to keep his promise and urging him to make his word good. After awhile I got all old accounts out of the way, and had as clean a set of books as one could wish for. I not only lost no trade because of this, but I say most emphatically that it was one reason of my success on the road and of my securing many an order because the retailer was deeply in debt to other houses. Money that ought to have gone to them had been paid to me.

The average traveling man thinks he is making himself and his house "solid" with the retailer when he treats payment of bills as of no consequence whatever. But he is only laying up trouble for himself. The man who keeps his accounts well collected will, taking a period of three years as a test, sell more goods and meet with less loss than will the man who thinks it the proper caper to talk as if his house did not want money and the customer was welcome to pay when it suited himself.

We have the following from an Ohio jobber:

I have been much interested in the papers read before the Southern Hardware Association, as given in *The Iron Age* of June 14, and particularly so with those on credits. My mail to-day closes up a transaction that will emphasize Mr. Dudley's statement that our customers are not educated to understand that their bills are a contract and payment should be made promptly upon maturity.

But to my story.

Last November we sold the firm of

Smith & Jones, in northern Ohio, a small bill of goods upon 60 days' time. The 60 days were up on January 20, 1894. Not hearing from them by February 1 we sent a statement. No attention was paid to that, so we sent another upon March 1.

Bear in mind that the concern is well rated and in good standing with every one. April 1 we added interest to the account and said if not heard from we would draw for the balance due.

No notice was taken of this, so upon April 20 we made draft for amount due, including interest at 6 per cent. from January 20. We sent this direct to the bank in Smith & Jones' own town, and had heard nothing from it by May 1. We then dropped the bank a card and, June 6, received back our draft with memorandum on back, "refused."

We then wrote a friend in that town for name of a good lawyer, telling him why we wanted it. We knew that he was also a friend of Smith & Jones, and he did what we expected him to do. He sent us a lawyer's name, but said he had spoken to S. & J. about our account, and they would pay our draft if the interest was left out and no exchange charged.

We concluded that this was the cheapest way out of the trouble, and made a draft for the exact face of last November's bill, and sent that to the local bank May 25. The amount of this, less 1 per cent. for collection, came back to us June 14, close upon seven months from the date of the bill!

Of course they cannot buy from us again except for cash down, but what of that? They can buy all the goods they want, for Dun and Bradstreet both give them good ratings. And if we sent a traveling man to see them he would apologize for our having been so "cranky," and take another order from them.

In this connection the following communication from W. S. Donnan & Co., Richmond, Va., relating to the terms upon which goods are sold, dating bills ahead, charging for boxing and drayage and returning of goods by customers, will be of interest:

Relative to the subject, terms upon which goods are sold, we have used our utmost endeavors to shorten our limit of credit. Subsequent to the war, for fully ten years, we granted four months on everything. From about 1875 until 1887 we gave 90 days on regular goods and 30 days on net goods, but at that time we changed our terms to 60 days on everything, less 2 per cent. cash 10 days, and very rarely deviate. We find it works admirably, from the fact that it not only enables us to turn over our capital more frequently during the year, but keeps the accounts of our customers smaller, thus obviating lapping bills, and in the event of their making assignments accounts are usually less than they would be if our limit of credit was greater.

Another reason experience has proved is that should it become necessary to take legal steps, the 60-day limit keeping the account down, an attorney does not have to go through the long process of instituting suit in order to secure claim, but can at once attach for all accounts under \$100, which we find facilitates matters greatly.

We have always been opposed to

DATING BILLS AHEAD,

and are of the opinion that the extent to which it is carried, especially by the shoe, notion and dry goods lines, does more to break the average country merchant than anything else. In many

instances we jobbers come in contact with ignorance. A salesman, say of shoes, in April approaches a merchant of limited experience and makes the proposition to date his bill August 1, four months, and ship goods at once, thus making his bill mature December 1, thereby giving a credit of eight months.

The inexperienced merchant naturally thinks "I can certainly dispose of my purchases in that length of time," and thus reasoning, is induced to give the salesman a large bill. During the interim contingencies arise, such as short crops, low prices for cotton and tobacco, and a scarcity of currency such as existed during the summer and fall of '93; trade falls off, and when his bill matures he finds that fully one-half of the bill bought remains on his shelves unsold, and the merchant of whom he made the purchase demanding payment.

As a natural consequence, he, unless a man of ample capital, is either compelled to ask an extension or forced to make an assignment, and every creditor compelled to share the loss, occasioned frequently by the firm originally granting the long time. Had long time never been granted, he, when the afore-said contingencies arose, would, as a prudent merchant, have adopted a conservative policy in the conduct of his business, and the occasion for asking an extension and making an assignment never have arisen.

While in some instances we date bills 30 days ahead, spring and fall, and occasionally have to carry our cotton trade, yet we sell 95 per cent. of our customers on 60 days, and are opposed out and out to dating ahead, and give our voice for limited credit as best for both parties.

As to the advisability of charging for

BOXING AND DRAYAGE,

we confess we are heartily in favor of so doing, and in every instance do, except in cases where a customer positively refuses to pay same and our insisting would cause the loss of his trade. In such cases dictation is submitted to by all jobbers, for the thought naturally arises, "Possibly a competitor would gladly secure his patronage by such concession." Still we think the charge perfectly legitimate, as the packing of Shelf goods necessitates the purchase of barrels and boxes and the services of an expert porter; and we hope that by co-operation said charges can, in every instance, be insisted upon.

With regard to the last question, the

RETURNING OF GOODS

by customers, while a considerable leakage in the aggregate, yet it is one hard to remedy. Frequently the blame attaches to the inefficiency or carelessness of salesmen in sending in their orders, or to the ignorance of the new merchant in making up his voluntary order, as, for instance, a coil of $\frac{5}{8}$ rope when he means $\frac{3}{8}$. In the first instance we think the salesman should pay for his carelessness; in the second we think it a question that can only be settled by the house selling the goods, according to the facts in the case, and not by our association at large, for in many instances one might be penny wise and pound foolish.

Conferences with Manufacturers.

The successful issue of several of the conferences with manufacturers which were held at Richmond in regard to a better understanding between them and the jobbing trade was one of the pleasant features of the gathering. Some of the delegates and guests were

at first disposed to be skeptical as to the accomplishment of anything in this direction, but the reasonable and conciliatory spirit shown by both the producers and distributors of goods laid the foundation for greater harmony in directions which will doubtless be to the advantage of all concerned. Besides the lines of goods on which definite conclusions were reached the condition of the market in several other lines was carefully considered and steps taken to secure if possible a better understanding also on these goods. It was recognized by the jobbers that altogether too many leading articles have been of late selling without any adequate profit, and how to correct this condition of things was one of the questions that occupied a considerable portion of the convention's time. The carrying on of these negotiations with the manufacturers was intrusted to several committees carefully constituted, so as to secure the best attention and the wisest action. The trade will be gratified to learn that some of these committees at least are accomplishing something, conferences between the manufacturers of Turning Plows, Trace Chains and Handled Hoes with the committee on these goods having been held at Louisville on Tuesday last. Relating to this matter and what it is hoped may be accomplished, we have the following advices from A. D. Langstaff, the president of the Southern Hardware Jobbers' Association:

I have invited the manufacturers of Turning Plows, Handled Hoes and Trace Chains to meet the committee from the association at the Galt House, Louisville, Ky., June 26, to confer relative to their products and endeavor to formulate a plan by which the prices on Plows and Handled Hoes may be so arranged for the coming season as to provide a reasonable profit for manufacturers and jobbers. The manufacturers of these two lines who have been invited sell almost their entire product to the Southern jobbers. Hence it may be possible that our committee representing these parties and with power to act may by co-operating with the manufacturers, all of whom have accepted my invitation, arrange a plan that will afford the manufacturer sufficient profit to produce a small dividend, and also enable the jobber to cover the expense attendant upon selling them. It will be no hardship to the user to ask him to pay 3 or 4 cents more for a Hoe or 8 or 10 cents more for a Plow, but these small amounts when applied to the enormous quantities made and sold each year will aggregate to the manufacturer and jobber very appreciable profits. It will also enable the manufacturer and jobber to avoid the necessity of reducing the wages of their employees.

By Telegraph.—As we go to press we are advised that 20 representatives of the manufacturers of Plows, Handled Hoes, Chain and Hames were present to meet the committee, and a very harmonious feeling between the jobbers and manufacturers characterized the conferences. Standards for Stage Hames were adopted, and confidence is expressed that this action will be thoroughly approved by the trade. The matter of uniform measurements

and designations for Chain was also considered, and the Chain makers agreed to take action in this direction. A brilliant banquet at the Pendennis Club was given in the evening by the Louisville jobbers and manufacturers. The conference with the manufacturers of Plows and Handled Hoes takes place to-day (Wednesday), and a satisfactory outcome is anticipated.

The Hardware Club of New York.

The invitation extended by the president and secretary of the Hardware Club of New York to the members of the Southern Hardware Jobbers' Association to visit the club when in the city left a very pleasant impression and was a courtesy which was appreciated by the convention. It was also not without effect, inasmuch as many of the members who have been in New York have been guests of the club, enjoying its privileges and giving the trade here the pleasure of meeting them. The names of some of these guests from the Southern States were given last week, and in this issue, in connection with a reference to the Hardware Club, will be found the names of others.

As the center of the Hardware trade the country merchants from all sections are constantly visiting New York, and for those who are connected with the Hardware trade or any of its related branches the Hardware Club is the natural place for them to meet the trade, and perhaps make their headquarters. In view of this fact, it might be well if an official invitation were extended to other associations, by which their members should be enabled to avail themselves of the privileges of the club when visiting New York. Such an invitation would be an act of courtesy which would promote the spirit of fraternity and help to make the club the meeting place for the entire trade.

Trace Chains.

The careful and able report made by Lee Richardson in regard to the designation of Trace Chains received the hearty approval of the convention, and the desirability of correcting the present methods of designating the Chains was recognized. With a view to conferring with manufacturers and reaching if possible an understanding, a committee, of which Mr. Richardson was chairman, was appointed. We are advised that conferences with manufacturers have already been arranged, and it is thought that they may be induced to adopt uniform measurements. It is certainly desirable from the standpoint of convenience and honesty that there should be some definite meaning to the designations of Chain, so that, for example, Traces 6½, 10, 2, will be 6½ feet long, will have ten links to the foot, and be made of No. 2 Wire, instead of having only seven or eight links and being made of No. 3, 3½, or even 4 Wire. It is cer-

tainly time that there be an accurate and uniform designation of these goods, thus avoiding the confusion which at present prevails in regard to the English and American and exact sizes. The manufacturers have gradually drifted into the present inaccurate, misleading and confusing practice, and the present time would seem to be a suitable one for united action in the adoption of standard designations which shall correspond exactly with the goods. This is a subject on which it would be well for the trade to express themselves, as the manufacturers will doubtless be glad to do anything in this direction which meets with the approval of their customers.

Correction.

In our issue, 14th inst., in mentioning the names of some outside jobbing houses present at the convention we included that of Henry Keidel & Co. of Baltimore. This was, however, an obvious error, Henry Keidel & Co. being well known to the trade throughout the South as direct manufacturers' representatives and not jobbers.

The Hardware Club.

BUSINESS MEN from near and distant points of the United States while in New York are constantly availing themselves of opportunities to inspect the quarters of the Hardware Club, as will be seen by a perusal of the names here given, which constitute but a fraction of the total who visit the club:

E. L. Baldwin, Columbia Rubber Company, Orange, N. J.
H. L. Judd, H. L. Judd & Co., Wallingford, Conn.
A. H. Jones, Meriden Bronze Company, Meriden, Conn.
L. J. Atwood, Plume & Atwood Mfg. Company, Waterbury, Conn.
F. C. Miller, T. T. Miller Hardware Company, Easton, Pa.
A. N. Abbe, P. & F. Corbin, New Britain, Conn.
Frank Squier, Park Commissioner, Brooklyn, N. Y.
Charles A. Schieren, Mayor, Brooklyn, N. Y.
Oliver Holmes, Trenton Lamp Company, Trenton, N. J.
F. P. Bowman, Bernardsville, N. J.
G. W. Werner, Dodd, Werner & Co., Cincinnati, Ohio.
George W. Corbin, Corbin Cabinet Lock Company, New Britain, Conn.
Ashbel P. Fitch, Comptroller, New York.
G. H. Jantz, American Wringer Company, Dayton, Ohio.
J. S. Blake, American Wringer Company, Springfield, Mass.
E. J. Drake, Woolley & Baynon Company, Stelton, N. J.
C. W. Trotter, Sheble & Klemm, Philadelphia, Pa.
W. L. Hughson, Geo. F. Eberhard Company, San Francisco, Cal.
Robert Knighton, Plume & Atwood Mfg. Company, San Francisco, Cal.
A. B. C. Dohrman, Nathan Dohrman & Co., San Francisco, Cal.
E. W. Phoenix, Morristown, N. J.
F. S. Beckley, Humason & Beckley Mfg. Company, New Britain, Conn.

James Richens, American Wringer Company, Auburn, N. Y.
R. B. Munn, American Wringer Company, Rochester, N. Y.
I. S. Haselton, Rome Brass & Copper Company, Rome, N. Y.

Among those who have visited the Hardware Club during the past week are the following gentlemen from the South, the most of whom are identified with the Southern Hardware Jobbers' Association:

Irby Bennett, Winchester Repeating Arms Company, Memphis, Tenn.
M. L. Fairell, Tabb & Jenkins Hardware Company, Baltimore, Md.
Lee Richardson, Lee Richardson & Co., Vicksburg, Miss.
W. M. Jordon, J. M. High & Co., Atlanta, Ga.
F. D. High, J. M. High & Co., Atlanta, Ga.
W. W. Woodruff, W. W. Woodruff & Co., Knoxville, Tenn.
W. W. Crandall, Ausable Horse Nail Company, Nashville, Tenn.
G. W. Barnett, Teague, Barnett & Co., Montgomery, Ala.
B. Hood, Augusta, Ga.
W. A. Gregg, Beck & Gregg Hardware Company, Atlanta, Ga.
W. M. Crumley, Beck & Gregg Hardware Company, Atlanta, Ga.

The Portland Flood.

THE FLOOD which recently visited Portland, Ore., was caused by the gradual backing up of the waters of the Willamette River until the buildings in the business portion of the town were submerged from 3 to 7 feet. Boats of all descriptions were in great demand, and fire engines were mounted on barges to be available in case of fire. Residences in some portions of the city were uninhabitable on the lower stories, and the upper floors were filled with furniture moved beyond reach of water. Business was carried on at a disadvantage or entirely suspended, as will be seen by the following quotation from a letter under date June 16:

While the entire business community has suffered no little inconvenience, yet no very great damage has been done to property and no lives have been lost. All Hardware jobbers have had to leave their basements and first floors. Corbett, Failing & Robertson and C. H. Dodd & Co. have had some 6 feet of water on their first floor, and Honeyman, De Hart & Co. about 4 feet. Not a single day has gone by with Honeyman, De Hart & Co. in which they have not shipped goods, so far as the railroads and steamer lines were prepared to carry them, while Corbett, Failing & Robertson did not lose to exceed three days' time. The work has been done by turning a portion of the second floor into a packing room and letting the goods down into small boats, in which they were carried to a point where a wagon or dray could take them. The water will be off our streets very generally within the next week, but it will be a month or more before basements can be used.

MERIDEN BRONZE COMPANY, Park place and Church streets, New York, manufacturers of fine Lamps, Tables and Art Goods, direct the attention of the trade to the fact that they now have ready for fall business the best line of medium and better grades of Banquet and Piano Lamps, in gilt and wrought iron, they have ever produced. Jobbers are referred to as duly appreciating this fact, as evidenced by the placing of some handsome orders already.

Letters from the Trade.

WE LAY BEFORE OUR READERS a number of letters which have come to us from the trade. It will be observed that they relate to a variety of subjects and we invite for them careful perusal. We shall be pleased at any time to hear from our readers on any subject of trade interest.

When Will the Bottom Be Reached?—This is a question which has frequently been canvassed by the trade, having been suggested time and again during the past few years, when the prices of goods have been almost constantly declining. Our readers will be interested in the facetious manner in which it is treated by our correspondent:

Without taking up too much of your time and space I would like to express myself as to what I think of "When will the bottom be reached?" relating to goods in the Hardware line. I have been in the Hardware business 25 years, and goods with few exceptions have been coming down ever since I started. At times the price would react a little for a short time and then go down again lower than before the reaction. It has been the case for a long time that every bill of goods we buy we expect to get lower than the one before, and my clerks frequently ask me the price of a certain article, saying it cost so much a month ago, but that it is likely lower now. Then I ask them if they think they will never get to the bottom. We often hear it said, "I had no idea they would ever get so low as they now are," but there are no more surprises for me. I would not be surprised if some day I should receive a letter from some manufacturer, say a maker of Wire and Wire Nails, in which he would quote me like this:

"DEAR SIR: If you can take carload of our goods now will ship you car of Wire, Barb Wire and Wire Nails. All they will cost you is freight from our mill to your station. We are crowded for room, must hold our trade and keep our men and machines at work."

Should they not hear from me in a few days, this letter would likely be followed with another saying, in substance, that they would agree to pay half the freight if I would take the goods. On receipt of this I would answer and say to them that if they would pay *all* the freight I would receive the goods. Having my own transfer wagons, drayage would not be much of an item. I would get the goods. The next thing would be to get rid of them. It could be done in this way, for instance: A farmer would come into my store and buy a Pocket Knife; I would give him a keg of Nails. Another would buy a Hoe and I would give him a roll of Barb Wire. The man who would get the Nails, perhaps, would not need them, but his children could drive them in the ground. Anything to "keep men at work and the machines running."

A traveling man told me a few days ago that the factory he was representing was losing 25 cents per keg on goods they put out. In answer to my question as to how they could stand it, he replied that they were working off a surplus or reserve fund they had laid away when they were getting better prices. Evidently the bottom has not been reached yet.

Financial Reports.—The discussions which have recently appeared in our columns referring to the matter of credits have called out the following communication from a dealer in Hard-

ware, Stoves, &c., in this State. We take pleasure in laying his suggestion before our readers:

There is one side of the credit business that your correspondent seems to overlook, and that is the poor facilities now available to ascertain the condition not only of the retail merchants, but of their customers on which they depend. Had the commercial agencies kept track of mortgages filed and foreclosure sales among the farmers and mechanics and tabulated the returns for five or ten years previous to the panic they would have been forewarned of what was coming, and wholesalers and retailers would have acted accordingly. For when a farmer or mechanic is sold out it is a business failure just as much as any other, and in order to judge correctly of credits it is now necessary to look beyond the middleman and have accurate knowledge of the condition of the consumers. I think there is an opening here for commercial agencies to improve their usefulness by having their reporters in each town or township send in reports of all mortgages filed and foreclosure sales taking place in their district.

Bill Heads.—The suggestions in regard to bill heads which were given in a recent issue have called out the following communication from a subscriber in Louisiana:

The engraver is usually expected to get up an attractive heading, without reference to the purpose to be served, generally resulting in an inartistic medley of incongruous fragments, tending to disguise and often conceal the information which should be made prominent. No thought is ever given to the fact that the party billed needs space to indorse it with his bill of lading number, page of entry, check mark, date of remittance, &c., and these have to be written across a conglomeration of barrels, angels, chains, flowers, cotton bales, ribbon scrolls, locomotives and cloud effects, which render them almost illegible. Kindly add a word for the buyer's book-keeper.

S. G. Monce, Bristol, Conn., uses a bill head, the arrangement of which carries out the ideas embodied in a recent article in *The Iron Age* entitled "Hints as to Bill Heads." Blank spaces are left for the name and address of the purchaser, under which is printed the name and address of the manufacturer. To the left of this matter are the following items printed in small type, space being left for numbers and weights:

Boxes.....
Packages.....
Net weight..... lbs.
Gross weight..... lbs.

Directly under the manufacturer's name and address the following items appear:

Agreed terms.....
Shipped by.....

The bill head is printed with ink that will copy, and the form has been in use a number of years. When it was

adopted it was the intention to have an itemized list of the articles manufactured printed on the back of the bill head, but that feature has not been carried out.

Should They Receive the Letter?

—We are in receipt, from a manufacturing house in New Jersey, of the following inquiry, which, substituting fictitious names for the real ones in the address of the letter in question, we take pleasure in submitting to our readers:

Several days ago we addressed a letter as per inclosed envelope:

Messrs. Smith & Smith,

Brooklyn,

N. Y.

Mr. Jones.

The letter was returned to us unopened with the explanation from the P. O. Department that this firm refused to receive this letter, as Mr. Jones was no longer in their employ, and they had no right to open same, as it was addressed to a former employee.

We differ from them to the effect that the letter was not addressed to Mr. Jones personally, and that the firm would have been perfectly justified in opening it, the name Mr. Jones appearing solely for the guidance of the letter to the correct department, Mr. Jones being the head of that department.

We would be pleased to have your opinion of the matter.

A Question in Book-keeping.

THE QUESTION submitted by "Disputant," in our issue of May 24, 1894, has called out a number of solutions from Hardwaremen in different parts of the country. The question was as follows:

A company keep a drayage account, into which all entries—horses, wagons, feed, harness, &c.—are entered for purpose of ascertaining cost of the department separately. A horse valued at \$200 dies. Should drayage account have credit for this at once, or should it be carried from the account in settlement of books at end of year?

It will be seen that various methods are adopted for arriving at the result, and different opinions are expressed as to the most expedient plan of representing the loss, as given in the following replies:

I.

This account is in manner of treatment like fuel account or expense account, where a company charge the account for everything bought, such as coal, stationery, &c., and credit the account at the end of the year for what is yet on hand, thus finding the net expense. Likewise drayage account having been charged with the horse when bought, is not touched at all because it has died, because when taking the inventory at the end of year the value of the horses, harness, &c., then on hand would only be taken and credited to drayage account, which would show the net expense for the year for drayage, which in his case would be the \$200 (the value of the horse having died) more than it would have been had it lived. Of course, if the horse instead of having died had been sold

for \$200, then drayage account would be credited at once for that account.

M. R.

II.

"Disputant" should credit his drayage account, and charge the dead horse to profit and loss at once, as the nature of this transaction is widely different from that of charging off bad accounts at the end of the year.

You are quite certain that the horse is dead and of no further value, but on the other hand accounts may in time prove doubtful, and as such are chargeable to suspense account or entirely worthless, when they should be charged to profit and loss.

In order that the book should form a complete record the entry should be made as above stated.

C. S. M.

III.

The account into which the horse is charged should, I think, receive its credit at the end of the year, being included in the amount charged off as loss or cost of that department. Of course, if the occurrence of the death of a horse is so rare that it is thought best not to consider it a part of the annual expenses of that department, then it might be charged off immediately—being carried to an account created for the purpose of recording such casualties. But I should prefer to let the matter pass without any immediate change in the account, just as I would treat an accident to a horse lessening his value 50 per cent. At the end of the year he would simply be appraised at one-half former value, the difference being a part of the loss or cost of that department.

J. C. H. L.

IV.

I would make the following entry on journal, or on journal and day book combined, at once:

Profit and Loss, Dr. to Drayage Acct.
Loss of horse, valued \$200.

At the end of the month, or six months, or year, whenever the books are squared, profit and loss account is balanced by stock.

T. P. J.

V.

Referring to the inquiry made by "Disputant" in a recent number of your paper, it is the writer's opinion that no entry should be made now on account of the death of the \$200 horse. At the end of the year when the inventory is taken the value of the fixtures belonging to this account, such as wagons, horses, harness, &c., will be credited the old account and debited the new account. This \$200 horse having died, the inventory of the fixtures will be \$200 less than had he lived, so that the total amount of expenses or loss on this account will be increased \$200. The total difference in the account being the total expense for drayage, will then be balanced in the usual way, and thus the total expense for the year will show in one item. To make an entry now for the dead horse would make two items for total expenses, and though this method would be correct, so far as figures are concerned, it would not be so clear if one wished to know the total expense for drayage for the year.

J. R. L.

VI.

I would say I should credit drayage account with the \$200 for lost horse and charge to P. & L., where it would eventually go any way.

H. A. U.

VII.

The stock used in carrying on the drayage is different from the expenses involved in it. This is a general rule for all business. The stock in this case consists of the cost or ascertained value of horses, trucks, wagons, har-

ness, &c., and should be kept in an account by itself. The expenses, such as feed, stable rent, veterinary services, shoeing, wages of teamsters, stablemen, &c., form a distinct account, to which these expense items should all be charged; and whatever is received for teaming should go to the credit of this account. At the end of the year, or at any time desired to ascertain the exact status of the case, take an inventory of the stock; any losses or depreciations shown by the inventory then become naturally chargeable to the expense account. A clean loss may be charged up at the time it occurs if desired; but if not, it will show at the time the inventory is taken. The fact of the losses or depreciation being charged to expense of course involves, by the system of double entry, being credited to the stock account. The balance either way of this expense account is naturally closed into the general profit and loss account of the concern.

J. S. C.

VIII.

If a business concern has an account as described in the article, no doubt when they purchase a horse the account is debited with the amount paid and cash is credited. If the horse dies I should think it proper to credit the account with the value of the horse at the time of its death and charge profit and loss with the same. If the horse was not charged to drayage account at the time of purchasing of course it should be omitted until the end of the year when the inventory is taken, for no doubt the horse would then come under the head of certain assets in the possession of the business.

B. H. R.

Starting and Conducting Business.

BY M. STRANSKY.

IN MANY CITIES of the United States certain particular methods have been adopted in building up vast mercantile establishments. The greatest successes, commercially, have been in the retail dry goods line—the department stores; but the means used can be applied to a general house furnishing store, under which designation a Hardware, Stove and Tinware dealer may properly be classed. A. T. Stewart was, perhaps, the first merchant in this country who attained great prominence by using many of the systems in vogue in every well organized department store of the present day. It is true that some of his well tried principles were originated by himself; but it is equally true that many business ideas, which he is sometimes credited with having created, had been practiced long before in the mammoth Old World establishments, such as the Bon Marché and Louvre of Paris, Whiteley's in London, &c.

In New York City and other Eastern cities competing merchants observed Stewart's amazing growth and gradually adopted some of his ideas, each successful competitor adding such other schemes for attracting custom as suggested themselves in the conduct of his own particular business. With the development of Southern and Western business centers (especially the latter) the methods so successfully practiced in the East were transplanted.

It may be urged that the processes which have proven valuable in the branch of trade referred to may not be feasible in the house furnishing line. There is no doubt, however, that they are, and I shall endeavor to mark out a plan of campaign for a Hardware dealer, with the utmost confidence that if substantially adopted it will most certainly lead to prosperity. Many of the ideas here announced are those successfully used heretofore, while others are new.

NEVER MIND THE RENT.

The most important requisite to success in the retail business is location. Numberless merchants, attracted by an imposing building, at perhaps a low rent, in an out-of-the-way street, have made the fatal mistake of preferring such a building to a more modest looking one in a prominent thoroughfare. To get the full benefit of the modern methods you must be located in the best street in the city. Never mind the rent! Location is everything. And now, having opened our store on a lively thoroughfare, let us proceed to business. Let us imagine an ambitious merchant with a stock of, say, \$5000 in a fair sized town anywhere within ten days from New York or Chicago—that is to say, a point where it takes ten days or so for freight to reach him.

SHOW WINDOW DRESSING.

Next in importance to location is the show window. Show window dressing is the most important advertising. The goods in a show window should be changed at least twice a week and often three times. There should be a window full of some good special sale article once or twice a week. Never let up on this in season or out of season. The best judgment must be used in selecting these special sale goods. Do not advertise through your show window an article the chief merit of which is cheapness. Be content often to make a very small profit on such articles; sometimes sell them at cost and occasionally sell them at less than cost.

BROOM SALE.

For example, suppose you decide to have a special sale on brooms. Ordinarily you might sell, say, a dozen brooms in a week. But for this special sale do not hesitate to order 25 dozen brooms. Now you can buy in lots like that brooms ranging from \$1.25 a dozen to \$2.50 dozen. If you buy them for \$1.25 and sell them for, say, 12 cents each, you will be giving your customers a bargain, but not a good broom. The broom will not give satisfaction and your customers, forgetting that they paid only 12 cents, will say "Oh, he keeps nothing but trash!" It will be a waste of time and energy. On the other hand, suppose you pay \$1.75 for the brooms. It is presumed that your special sale on brooms is at a time when the broom corn crop is good and brooms are cheap, so that you can buy a fairly nice three sewed broom for \$1.75 a dozen. Suppose you sell them at 15

cents each. You will lose about 2 cents on each broom, but a large proportion of your customers will buy then and there other goods on which you will make the regular profit; many of them will talk to their relatives, friends and neighbors about your store, will show the broom they bought and will be sure to go to your store when next they require anything in your line.

You should advertise this broom sale like this: On a Monday put in your show window the whole 25 dozen brooms and nothing else. Hang them around the back, sides and front, and pile a lot of them in the middle of the window with a large ticket reading

SPECIAL SALE.
Beginning Thursday,
25 dozen 3 String
Extra Quality
BROOMS,

13 C.
EACH.

When Thursday comes take the whole 25 dozen out of the window and place them in a rear part of the store, so that your customers will have a chance to see and buy other goods. If you hand the brooms out from the show window or place them too near the door, many will buy the brooms and nothing else and pass out. But even in such cases you will, in the near future, get the benefit of the advertising by an increase of patronage. You will find that if you give extra value, shrewd housekeepers will wish to buy three, four or six brooms at a time. Even competitors will try indirectly to buy up your brooms. Your plan should be to first stamp, with a rubber stamp, your name and address on the handle of each broom and then limit the buyers to one or two brooms—telling them plainly that this is a special lot and you wish to give all your customers the benefit of the purchase; besides you must limit the number to each in order to prevent your competitors from buying them to the exclusion of your customers.

SOME SEASONABLE ARTICLE.

On Thursday, when you have emptied your show window, you must be prepared with another lot of goods, say Chamber Pails, or Japanned Bread Boxes, or some seasonable article, Fly Screens, or Ice Cream Freezers, or Oil or Gas Stoves, or Coal Hods or Enamelled Preserving Kettles. There are a thousand and one things suitable to this purpose. But avoid "running on" a petty article, such as a 4-cent Shovel or a 3-cent Tack Hammer, unless you have a dozen or so of such articles at the same time, as special sale leaders. But do not, under any circumstances, sell a poor article at a special sale, not even at 1 cent. If you wish, by way of variety, to sometimes run on things at from, say, 3 to 9 cents, there are plenty of good quality articles even at such trifling prices—Tacks, Coal Shovels, Pokers, Stamped Pans, Pie Plates, Door Bolts and numberless things to select from in Hardware, wooden ware, tinware and miscellaneous knick-knacks. It is a good plan, whenever advertising either through show windows or newspapers

or circulars, to put a tag on one of each of the advertised articles reading:

SAMPLE NOT TO BE SOLD.

This is done so that in the event of your having a great rush for the advertised articles you can have one left to show belated purchasers. Tell them you have had an extraordinary rush for the goods, show them the sample, take their names and addresses and promise to order more, and to deliver to every one who calls in answer to your advertisement. In other words, you must make good every announcement at whatever cost; for nothing harms a merchant so much as to break faith with the public. It is not necessary, in order to attract custom by window advertising, to have a window full of one article. At times a general assortment of goods may be displayed, and one or a few articles may be marked at a reduced price. If a merchant has more than one show window he has a great advantage, inasmuch as he can display the regular lines of goods at all times, while reserving one window for special sales in steady and rapid succession. The greater part of show window dressing can be done on variously shaped forms, which may be trimmed in the store and placed in the window ready dressed. There is limitless scope for this, and there should be constant study for striking effects.

A PLEASED CUSTOMER.

There is no objection to having, say once a week, a special sale for one day only on a lot of some desirable articles, with a suitable price ticket hanging over it. This sale need not be advertised in any other way except by the ticket announcement inside of your store. Customers who happen to be in the store will come unexpectedly upon the bargain, will buy, and will consider themselves fortunate in having visited your store that day. They will leave pleased; and a pleased customer talks in your favor. Moreover, they will call again and again on other days in the hope of securing more of your

TO-DAY ONLY

specialties. Thus the public will gradually fall into the habit of visiting your store without having been attracted by newspaper announcement or show window display. Moreover, your competitors will not be posted as to what you are offering. But be sure you have your offerings for one day only, if you have so announced. You can next day put the goods back in stock at the regular selling price. Occasionally, it is advisable to have a lively sale even for one hour only. All this creates stir, activity and favorable comment, and helps to build up a business. Make it a rule, and announce by placards, that customers are welcome to look around whether they purchase or not. Instruct your salesmen not to importune visitors to buy, so that they will be perfectly at ease in looking around. But your salesmen must be alert and must watch the expressions

on the faces of visitors so as to be ready to answer any inquiries, otherwise there will be some complaint of inattention.

METHODS OF ADVERTISING.

As we have been considering the value of show windows from the standpoint of advertising, it may be well to next consider the general subject of advertising before taking up the matter of considering affairs inside of the store. It is undeniable that more money is wasted in advertising by the inexperienced than on any other thing in business. We hear and read so often of the value of printed matter or newspaper advertising, or of the vast establishments founded by advertising, that many merchants are tempted to try that supposed way to success. As a general thing most of the money thus spent is wasted—at least there is not sufficient return for the outlay. A merchant with a stock of, say, \$5000 ought to do a business of \$15,000 to \$30,000 a year—depending on how near he is to the market. Let us say he sells in 1893 \$22,000. He should decide to spend 3 per cent. for advertising in 1894, which would be \$660. This amount would be most advantageously spent if divided about as follows:

On show window leaders.....\$500.00
On newspapers..... 100.00
On circulars..... 60.00

Total.....\$660.00

The best method of show window advertising has been described. As to newspapers, it requires special talent to advertise profitably. Never advertise like this:

The best place in town to buy Hardware, House Furnishing Goods, &c., is at John Smith's, 100 Main street. We have the best assortment at prices that defy competition.

Instead of this ancient and comfortable, but worn out way, adopt a more striking method. Mention some special articles, describe them concisely, use cuts whenever possible, and above all quote prices. For example:

SPECIAL SALE.

Galvanized Coal Hods, a nice size, corrugated bottom, worth 50 cents, 29 C.

25 dozen Willow Clothes Baskets, extra strong, medium size, first quality in every respect, 24 C.

Your newspaper announcement must never appear the same way twice in succession. At times you can vary the style, thus:

OH, MY!

A Lawn Mower like that for \$5.
This is heard daily in our
Store from our delighted customers.
Come and look at the Mowers.

Then follow with three or four other items, avoiding long winded announcements. Advertise only excellent values, and remember that this is a busy world. People have no time to read elaborately worded advertisements, and cannot remember what they read if you say too much. "Brevity is the soul of wit and the life of advertising."

In determining the outlay for newspaper advertising the amount is based on a stock and sales as stated. As the business grows the proportion may be increased in favor of newspaper advertising. When the business becomes large, with the stock of merchandise correspondingly large, more than half of the total amount set aside for advertising may profitably be devoted to newspaper announcements. But window advertising must never be neglected and must be persisted in no matter what dimensions the business attains.

WITHOUT ANY RESULT.

Circular advertising has the disadvantage that it takes too long to get the matter from the printer and have it properly distributed. To give the circulars away on the street is not only a source of annoyance to passersby but is a positive waste, since nine out of ten are thrown away without being read, and the tenth one is read out of curiosity and then thrown away without any result. It may be well to do some circular advertising, but they must be distributed from house to house by the most reliable boy you have in your employ. Nine out of ten boys whom you hire temporarily to give out circulars will start out bravely with an armful, work faithfully for an hour and then throw the remainder over a fence, down a sewer or make a bonfire with them. The announcements on your circulars must also not be of the defy competition order, but must have a striking heading like this:

SNOW IN JULY

would be a surprise, but not more than those real copper bottom Wash Boilers for No. 7 Stoves at 79 cents.

The idea of fixing odd selling prices, 9 cents, 24 cents, 49 cents, 74 cents, 98 cents, \$1.98, &c., is a good one. It sounds cheaper and seems cheaper. Just observe how a lady in looking through a line of goods will ask the price of, say, a Bird Cage. You state the price, say, \$1.98. She looks at other cages, and, presently, coming back to the first one, she will say: "How much is this—\$1 and —?" The \$1 seems to have been impressed on her mind, and she thinks the article is much less than \$2.

And now as to the general conduct of the business. Have one price only. Place placards in conspicuous places, reading:

One price—a fair one.

One price—No deviation.

It is necessary to gain the confidence of buyers by having absolutely one price, and by having all your selling prices marked in plain figures. This is a saving of time and increases sales. Oftentimes customers will buy goods when they are boldly marked out. The price attracts; many do not care to ask questions but will buy when they see the articles offered that way. A large price ticket is a silent salesman.

LIABLE TO BE STOLEN.

A matter of extreme importance is the general arrangement of fixtures.

Have as few goods on shelves as possible. Put your goods out on counters. All the small articles, Hammers, Locks, Tacks, Spoons, Cutlery and a thousand other things, should be displayed in snug fitting bins, each bin with a price ticket on it. You will be surprised how those little bins will attract customers. Have plenty of goods on counters and center tables, with tickets everywhere. Change around often. Have a line of goods one week in a given place and then change to a different part of the store. Have your shelves for such goods as are seldom called for, or for the finest and highest priced goods. For instance, if you have single plated Tea and Table Spoons in your bins, keep the high priced triple plated Spoons on shelves or in a showcase. Get along, by the way, with few showcases; one showcase, in fact, is sufficient. Showcases are out of date. It may be necessary to have one, but that is surely sufficient. Do not fear that goods exposed on counters are liable to be stolen. Though this may happen occasionally, it is made up 20 times over by increased sales. Make it a rule to cheerfully refund the money if any article bought proves unsatisfactory. Do not insist on exchanging or selling something else in place of the goods brought back, but refund the money promptly. In nearly every instance the customer will buy something else amounting to as much or more. Have placards also prominently posted up reading:

If anything does not suit, bring it back and get your money.

Money refunded if any purchase proves unsatisfactory.

We don't want your money unless you are satisfied.

Merchants who never make mistakes never make anything. Mistakes of overbuying or of buying slow selling goods—"stickers" they are called—will frequently be made. In such cases the first loss is the best loss. If goods will not move at one price, reduce the price. If after a few days they still stick, reduce again. Keep reducing until you get rid of them. Sometimes even a deep cut in price will not avail. In that event put a premium on the goods—a "P. M." it is called. That is to say, give your salesmen 5 to 10 per cent.—according to the necessity of the case—on all the stickers they sell. At times, if reduced price will not succeed, put the price back again and give "P. M." instead. All goods on which a "P. M." is given should have a separate tag with the amount of the "P. M." noted thereon. When such goods are sold the article with the tag should be brought to you, so that you can put your initials on the tag. The latter is then retained by the salesman and cashed, say, once a week. Unless some system of this kind is adopted, you will find that the "P. M." tags will sometimes be surreptitiously transferred to quick selling goods, and you will thus be paying a premium for selling regular stock.

SEE HOW QUICKLY.

If it is necessary to deliver goods to customers, make it a strong point to deliver promptly. If you deliver by boys offer, besides nominal wages, say 1 or 2 cents for each delivery. You will be surprised to see how quickly the boys will return and how eager they will be for more deliveries. Don't find too much fault with your help. Do not confine all your pleasant words to your customers. If a salesman does well, or keeps stock in good order, or dresses a good window, show your appreciation by encouraging words.

BE FAIR.

Let it be an unvarying rule to treat traveling salesmen cordially. They are well posted as to prices and can give you valuable suggestions at times. In your dealings with the merchants from whom you buy be fair in every way. Pay promptly and make as few claims as possible. Even if you have a fair claim, if the matter is trifling, let it pass without making any claim. Success in business is due to the good will not only of buyers but also of sellers. Avoid discussing politics and attend strictly to business. If possible go once a year or so to the market. Visit other retail establishments. You will thus obtain suggestions which may be utilized. Divide the keeping of the stock among all your clerks—that is to say, give each clerk a certain part of the stock to look after, to keep it clean, to notify you of goods wanted in order to keep up the assortment, or to advise you of such goods as are moving slowly.

CONSPICUOUS SUCCESSES.

It may be urged that the general plan of conducting business as here outlined may be very well for a dry goods store, but is not adapted to a Hardware store and House Furnishing establishment. But this is a mistake. The same methods which prevail in the branch where the most conspicuous successes have been made will build up a Hardware or House Furnishing business. Indeed, they have done so everywhere.

IT IS EASY TO ADD.

It should be the ambition of the retail Hardwareman to build up a business in which may be bought almost everything. When the Hardware, Stove and House Furnishing departments are in good running order, it is an easy matter to add, say crockery, china, glassware and bric-a-brac. Then as additional space is obtained, pictures and frames, wall paper, upholstery, furniture and carpets may gradually be added—in fact everything pertaining to the interior of a home may legitimately be sold under one roof. It should not be forgotten, however, that no line must be added unless the assortment is quite complete. Hence, if there is insufficient capital for the purpose it is preferable to wait until you are financially able to properly open each new department.

A CERTAIN INVESTMENT.

In this way the Hardware, Stove and House Furnishing store may develop into a department store of kindred lines—each branch conducted on its own merits, and the accounts kept as though each were a separate business, so that the profits or losses of each department may be accurately ascertained twice each year. A competent head must, of course, be engaged for each important line. The usual way is to make a certain investment for stock in a given department. After that subsequent weekly purchases are regulated by the weekly sales, and thus perfect control is maintained over the buying. A good office man or financier can hold the buyer or manager of each department in perfect check, and can tell quite accurately just how each separate department stands at the end of each week.

It may confidently be asserted that the growth of many large and successful establishments all over the United States is due to the conduct of business on the general lines briefly mentioned. At any rate, it is an easy matter for ambitious readers to experiment with some of the ideas advanced.

Trade Items.

JUDGE BAKER of the Federal Court has, we are advised, issued a decree in favor of Elwood W. McGuire of the Dille & McGuire Mfg. Company, Richmond, Ind., in his suit against the F. S. Anderson Company and Francis S. Anderson, also of Richmond. The suit was brought for infringement of a patented improvement in ratchet mechanism in Lawn Mowers.

PITTSBURGH WIRE COMPANY, whose New York office was formerly at 7 Warren street in charge of James A. Farrell, Eastern sales agent, is now in room 903 of the new Postal Telegraph-Cable Building, Broadway and Murray street, New York.

RANDALL FENCE COMPANY, LeRoy, N. Y., who are putting on the market the Randall Woven Wire Fencing described in our issue of 7th inst., are offering it 3 x 6 inch mesh, 34 inches high, listing at 75 cents per rod; 40 inches high, listing at 75 cents per rod, and 46 inches high, listing at 85 cents per rod. It is the intention of the company to give exclusive sale to dealers in their respective localities, and discounts from the above prices will be quoted on application.

THE ADVERTISEMENT of Dame, Stoddard & Kendall, Boston, on another page, illustrates the neat and attractive manner in which Zeolithe, the French Razor Strop Paste, for which they are the sole selling agents in the United States, is put up. It is claimed that this Paste will put a keen edge on the dulllest razor. On the other side of the box directions are given for the use of the Zeolithe.

Magill Hardware Co.

W. L. MAGILL, Chattanooga, Tenn., issues a circular in which announcement is made that he has severed his connection with the Carter-Magill Hardware Company of that city, and that he has established an independent and strictly wholesale Hardware business at 622 Market street, under the style of the Magill Hardware Company. Mr. Magill has been identified with the Hardware trade of Chattanooga for more than 15 years, having been associated during this period with J. H. Warner & Co. and the Carter-Magill Hardware Company.

Rack for Machine Repairs and Fittings.

THE VERY conveniently arranged rack for machine repairs and fittings which is shown in Fig. 856 is in use in the store of C. T. Rosenthal, Batesville, Ark. The large shelves at the top of the rack are used for inspirators, jet pumps, steam and water gauges, emery wheels, spring wire, sheet brass and similar goods. The three rows of drawers beneath, each drawer being sampled with its contents, contain steam and water cocks, brass oil cups, glass oil cups, air cocks, gauge cocks, lock nuts, &c. The open space in the lower row of drawers is used for babbitt metal. On the cross piece immediately below the drawers are marked the names of the goods contained in the vertical row of pigeon holes beneath, each row containing fittings of the same kind but of different sizes. Of the 11 vertical rows, the first one holds bushings, followed by couplings, ells, nipples (short), nipples

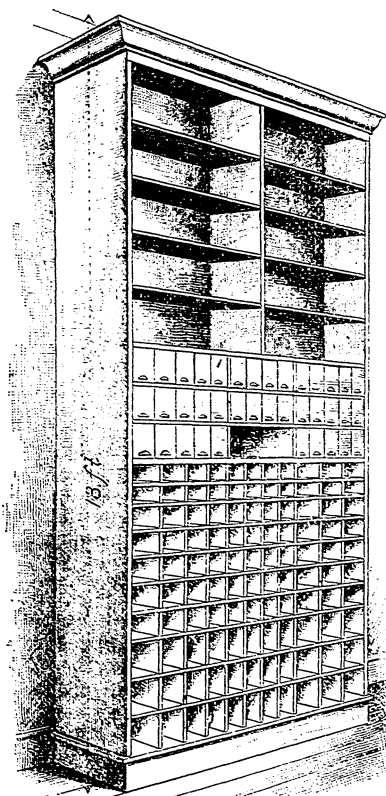


Fig. 856.—Rack for Machine Repairs and Fittings.

(long), reducers, tees, unions, check valves and globe valves. The middle partition is marked with the sizes, the goods in each horizontal row being of the same size, the sizes running from $\frac{1}{4}$ -inch at the top to 3-inch at the bottom. Thus any one of the 11 kinds of fittings found in the upper row will be $\frac{1}{4}$ -inch, those in the next lower row $\frac{3}{8}$ -inch, &c., by which arrangement no trouble is experienced in locating any article of the size desired. The size of the openings increases toward the right, also toward the bottom, thus accommodating the different sizes of these goods. In front of the rack is a counter, under which sheet and square

rubber packing is kept; also hemp packing, lace leather, &c. By this arrangement all these goods take up comparatively little space and are accessible when selling, stock taking, or when looking over them with a view to replenishing.

Price-Lists, Circulars, &c.

C. SIDNEY SHEPARD & CO., 23-25 Randolph street, Chicago: Terne Plates for roofing. This 12-page pamphlet is a beautiful specimen of typography and engraving, inclosed in a pale green cover bearing the firm's name and business stamped in red letters on a silver ground, representing a sheet of Roofing Terne. It contains an illustrated list of the special brands of American and foreign roofing Ternes made for and sold by the company. These include, among domestic Plates, Westmoreland, a full weight, heavily coated Plate, squared and stamped; Kenwood, a full weight, bright finished Terne; Furnston, a Terne of Worcester grade, and Apollo. Of imported Plates, the well-known brands Worcester, Morrision Old Style and Pontymister Old Style are illustrated and described.

THE CINCINNATI MFG. COMPANY, Cincinnati, Ohio: Bank Railings, Elevator Inclosures, Architectural Brass and Wire Work, &c. A catalogue of 51 pages illustrates, with prices and descriptions, Wire, Iron and Brass Work, Stable Furniture, Bank Railings and Grilles, Wire and Iron Fences, Weather Vanes, Roof Cresting and Finials, Vases, Settees and Chairs, &c.

THE IRWIN AUGER BIT COMPANY, Wilmington, Ohio: The Irwin Solid Center Stem Auger Bits. An illustrated catalogue and price-list shows these goods in Auger, Car and Machine Bits, Boring Machine Augers, Dowel Bits, Carpenters' and Millwrights' Augers, Sugar Tree Bits, Nail Sets and Combination Countersink and Nail Sets. The catalogue is elegantly printed and shows the line of goods to which it is devoted in an attractive manner.

CAPITOL MFG. COMPANY, Chicago, Ill.: Loew's 10,000-Mile Cyclometer, Circulars illustrate the Cyclometer, which weighs 4 ounces and records up to 9,900 miles and repeats. It also has two other dials entirely independent of the total mileage dial; one to indicate 1 mile and fractions thereof and the other indicating up to 100 miles and repeating, thus serving as a trip indicator.

J. R. CLANCY, Syracuse, N. Y.: Theatrical stage Hardware. Catalogue No. 10, for 1894-95, contains illustrations, descriptions and prices of a large line of Hardware designed for theatrical stage purposes. Among these are many articles unfamiliar to the Hardware trade in general, such as Stage Screws with three eyes, Brace Hooks and Eyes, Clamps for extension braces, Steel Battens, Loose Hook Pin Back Flaps, Shifting Irons, Loft Sheaves, Windlasses for drop curtains, Instantaneous Curtain Pole Brackets, Footlight Posts and Chain, Stage Lighting Apparatus, Border Lights, &c.

J. BROWNFIELD, South Bend, Ind.: Buyer's Filing System for use in purchasing departments. A catalogue and circulars illustrate and describe cloth covered boxes, shelves for holding them, indexed and gummed labels used in the system for filing catalogues, circulars, prices, memoranda, &c. Manufacturing and Hardware concerns who have the system in use speak of it in high terms.

NEW YORK BELTING & PACKING COMPANY. 15 Park Row, New York: "Buried Treasure." This is the second of a series of booklets issued by the company and treats of their Leatherite Cotton and Test Carbolized Rubber Fire Hose. These goods are described, their particular features and advantages being prominently brought to notice.

THE AMIDON TOOL CORPORATION, Buffalo, and 113 Chambers street, New York: Bit Braces. A circular devoted to these goods illustrates Amidon's Corner Brace, Du Mont's Ratchet Bit Braces and Barker Improved Braces. The corporation remark that they make all sizes of Braces from 6 to 14 inch sweeps and have only catalogued those which are generally purchased by the trade.

It Is Reported—

Colorado.

That the Hardware store of Maxwell Bros., ROCKY FORD, was burglarized on the 13th inst.; \$60 worth of goods were taken.

Illinois.

That Scharlach & Weidner are now carrying on the Hardware business formerly conducted by Zeller & Kahney, CISSNA PARK. They have just completed a large Implement addition to their store, 24 x 70 feet, two stories high.

That George Smith of MACKINAW has completed his new brick building, and has moved his Tin and Hardware stock into it.

That Phelps & Waite have bought out O. T. Bartholomew's Hardware stock at ROCKTON.

That \$50 worth of goods were stolen from the Hardware store of Bothwell & Hopkins, CLAY CITY, on the night of the 14th inst.

That on the 7th inst. burglars visited the store of H. L. Reid, at BUDA, and carried off about \$50 worth of Cutlery.

Iowa.

That Chas. Meddaugh & Son of GAINES have sold their Hardware stock to J. W. Dawson of CLEAR LAKE, who will continue the business at the old stand.

That James Kennedy of OTTUMWA has opened a new Hardware store.

Kansas.

That on the 16th inst. \$75 worth of goods were stolen from the Hardware store of Peebler & Barr of MERIDEN.

That P. A. Morrison is the proprietor of a new Hardware store at HEPLER.

Michigan.

That George T. Corning, Hardware merchant, of IRON MOUNTAIN, has removed his stock to larger and more commodious quarters.

Minnesota.

That Ambrose Eynon's Hardware store, at STEWART, was burglarized on the 16th inst.; \$200 worth of Revolvers, Razors and Knives were taken.

That A. W. Mertens of NEW PRAGUE has removed to KOCHICHING FALLS, where he intends to enter the Hardware and lumber business.

Missouri.

That O. F. Tomlinson of EDGERTON has purchased the Hardware stock of Messick & Dryden of LIBERTY, and will continue the business with John W. Ross as manager.

That Gurley & Son's Hardware stock, at PURDY, was destroyed by fire on the 13th inst. The Implement stock was not damaged. Loss, \$8000; insurance, \$2000.

That S. Brumley of the Hardware firm of Brumley & Painter, LAMONTE, has purchased his partner's interest and will continue the business alone.

New York.

That the wholesale Hardware firm of J. H. Van Duzer & Co., NEWBURGH, was dissolved by mutual consent on May 28. E. B. Taylor has retired from the business, which will hereafter be conducted by J. H. Van Duzer, E. C. Van Duzer and W. E. Sayer, under the same firm style as heretofore.

Ohio.

That Geo. Rich of JEFFERSON has purchased a one-third interest in the Hardware firm of Bradley, Monk & Co. of Columbus.

That the Hardware store of Hay & Turner, CRESTON, was entered by burglars on the 15th inst., and the greater part of the plated goods and Cutlery stolen.

Oregon.

That J. B. Rees, Hardware merchant, at SCOTT'S MILLS, has sold out.

Vermont.

That A. H. Webb has sold out his Tin shop, at BRADFORD BOX, to Prescott & Robishaw.

Wisconsin.

That burglars entered the Hardware store of Thomas Perkins, DODGEVILLE, on the 17th inst., and got away with a quantity of Revolvers and Cartridges.

The Hardware trade throughout the country are requested to report business changes, improvements and other matters of trade interest suitable for mention in this department.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

White Lead.—The slowness that usually characterizes business at this season of the year is the most prominent feature of the market. Next to that is active competition for such business as may be in reach, and naturally low prices for everything, good, bad or indifferent, that is sold as White Lead. It is not clear that lower prices than those that ruled a week ago have been accepted in this quarter. It is plain, however, that business has been done and more solicited at previous lowest rates, while reports come from far Western points that the competition is more severe there and prices relatively lower. This applies to the general line of Lead products.

Red Lead.—No improvement has taken place in sales or in the demand for either foreign or domestic brands. In fact, there is only hand-to-mouth business and not much of that. Prices are somewhat ragged, but have undergone no decided change.

Litharge.—Very few orders are coming in at present from any quarter. Consumers of the low grades seem to be well supplied and buyers of the finer qualities are extremely indifferent. Prices are quoted as before, but seem to be rather weak.

Orange Mineral.—Some orders are being placed for foreign brands for future delivery, but the movement in this connection is hardly up to the average. Spot sales are moderate and the demand is slow. Prices rather weak, but showing no decided change. Domestic is freely offered at prices that were named last week, but buyers take hold very indifferently.

Zincs.—There have been free offerings of German at 5¢, and some effort was made to secure orders for round lots at a fraction less. This competition bears more or less upon domestic product, and at least has the effect of delaying contracts for future deliver-

ies. At any rate, few orders have been placed recently, although special prices were quoted in numerous instances. Sellers' quotations have not been changed.

Colors, &c.—In prices of Dry Colors no changes have taken place. The movement in Oil Colors has been very narrow also, but, with the cost of Oil higher, manufacturers of high grade goods make fewer and smaller concessions from the regular list. Regarding business, about the best that can be said is that, in a general way, it is fair for the season. No change has taken place in Chalk, Whiting or Putty, the demand for all being spiritless, while sellers stand out for about former prices.

Oils and Turpentine.

Linseed Oil.—Leading Western manufacturers have advanced their prices to 53¢ @ 54¢ for raw Oil, delivered here or at common point, owing chiefly to the condition of the market for raw material, but in part to concentration of the supply of Oil and a friendly understanding between lately conflicting interests regarding operations in the near future. City crushers still quote on the basis of 54¢ for domestic and 55¢ for Calcutta Seed raw Oil with the usual 3¢ additional for boiled Oil, but sales are momentarily slow and large buyers, it is claimed, have enough stock coming forward on old contracts to meet their wants in a great measure. There is little cutting prices at second hands. That fact leads to the impression that jobbers are carrying no burdensome stocks.

Cotton Seed Oils.—Dealings have been on a moderate scale. The demand has been slow as well, and upon the whole the market shows slightly weaker tone, although not sufficient pressure to force values lower. The main feature is that buyers and sellers are 1¢ @ 2¢ apart when deals involving other than small lots are concerned, but that prices have ruled well up to the average of those of the preceding week on ordinary dealings. Sales were chiefly on the basis of 29¢ for prime crude and 33¢ for prime Yellow on the spot.

Lard Oil.—Prices for prime Lard Oil have declined. Popular brands went at 54¢ @ 55¢, and some that are not as well known sold at 1¢ or 2¢ less. The decline is attributed chiefly to low cost of raw material, but there is more than a vague possibility that slow sale of Oil and consequent accumulation of supply in pressers' hands has weakened the market to some extent.

Fish Oils.—In purchases of crude Sperm, Whale and Menhaden nothing has been done that changes the complexion of the market, and prices are, for the time being, nominal in a great measure. Refiners quote lower on bleached Menhaden, chiefly because of late slowness of sales, and have also made some concessions in other lines while not altering quotations except in the instance of the Menhaden products.

Miscellaneous.—Common Olive Oil on spot is selling at about the same prices that ruled last week, but parcels for future shipment are at some concession, and upon the whole the market presents a soft appearance. Coconut Oils are slightly lower in price and move rather slowly. No change has taken place in red Saponified or Elaine Oils. Cod Oils have moved slowly at about former rates.

Spirits Turpentine.—Prices are up to 30½¢ for regular and 31¢ @ 31½¢ for machine barrels. The advance is due to higher cost at the principal points, where speculation has cut some figure during the week. Business here has been only fair and of extremely commonplace type.

Family Grinder and Polisher.

The Appleton Mfg. Company, Philadelphia, Pa., have recently placed on the market a miniature emery grinder and polisher, as shown in Figs. 1 and 2. The machine is used as an attachment to sewing machines, secured in position

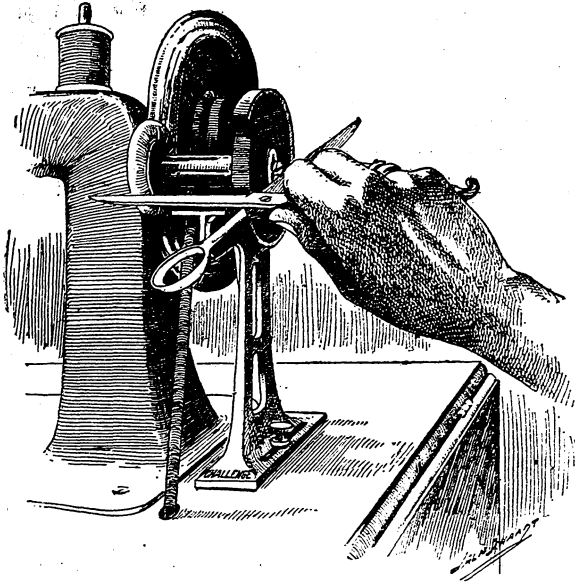


Fig. 1.—Family Grinder.

by means of two small screw eyes passing through a slot in the base of the column. The slot provides for the cross table adjustment necessary in obtaining a greater or less degree of friction between the driver and the driven wheel; also for withdrawing the grinder entirely from the fly wheel when not in

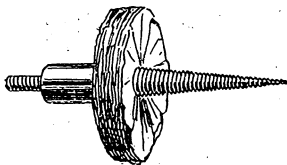


Fig. 2.—Polishing Wheel.

use. By means of a friction wheel of small diameter which presses against the fly wheel of the sewing machine the emery wheel is driven at a high rate of speed, attaining, it is stated, a velocity of 3500 revolutions per minute. The rest upon which the blades of the scissors



Fig. 3.—Grinder and Polisher in Use.

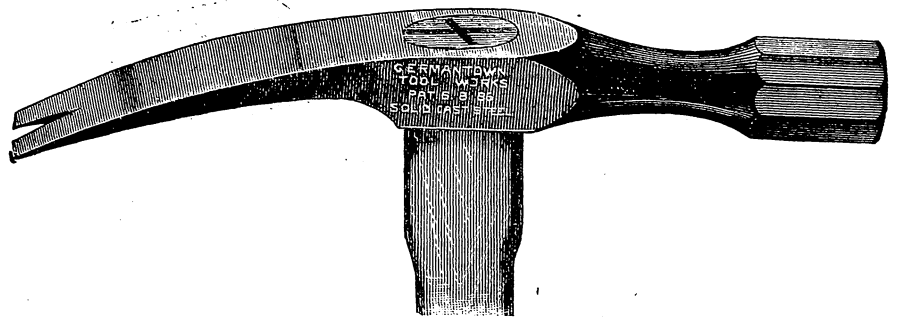
are alternately placed, Fig. 1, is located below the center of the emery wheel so as to present the scissors to the face of the wheel at the correct angle for grinding. To maintain this angle as the wheel is reduced in diameter

through wear, also that the rest may always be kept close up to the wheel, the rest is provided with means of adjustment upon an inclined arm which elevates it when moved toward the center of the wheel. One side of the emery wheel is entirely exposed and projects beyond the frame of the grinder at the side, so that scissors ground

upon it may be sharpened close up to the joint. The device is shown in operation in Fig. 3 and is adapted to women's use for sharpening scissors, knives, needles, &c., and for polishing table and silver ware, jewelry and similar articles at home. The makers remark that as a grinder it is simple in construction, effective in action, neat and compact, and that although weighing but 12 ounces and being so small that it can be carried in one's pocket, it is adapted to a wide range of usefulness. It is explained that the machine is not limited to use upon sewing machines, for by removing the rubber friction ring and using a $\frac{1}{4}$ -inch round belt, manufacturers, dentists, jewelers, &c., can run it fully as well by applying any other power they may have available.

Tack Hammer No. 71.

The tack hammer represented two-thirds size in the accompanying cut is put on the market by the Germantown Tool Works, 518 Commerce street, Philadelphia, Pa. It is referred to as a new

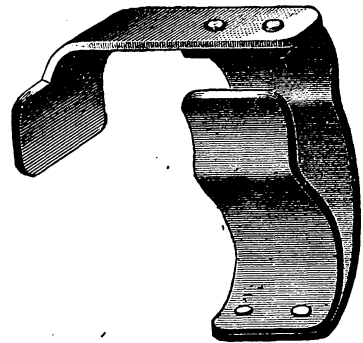


Tack Hammer No. 71.

style of upholsterers' pattern tack hammer, forged from solid steel. The goods are packed half a dozen in a box and are sold, it is stated, at a price that makes them available by the masses.

Burton's Acme Shaft Coupling.

Columbian Novelty Company, North East, Pa., are offering the shaft coupling illustrated herewith. The coupling is made of two pieces of cold rolled steel solidly riveted together, and is designed to prevent rattling in the coupling. The makers state that the couplings are quickly and easily inserted or removed, as they may be driven in

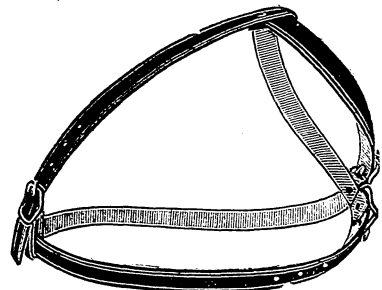


Burton's Acme Shaft Coupling.

or out with a hammer without removing the bolt or shaft; that the shape is such that they are held firmly in place by spring tension; that being made of two pieces they will not break, and that they are warranted to preserve their strength and elasticity and not to bend or break with ordinary use.

Leather Dog Muzzle.

Keystone Dog Collar Mfg. Company, 505 Commerce street, Philadelphia, Pa.,



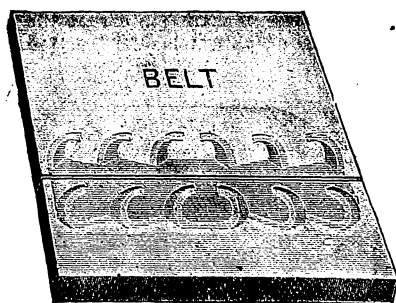
Leather Dog Muzzle.

are offering leather dog muzzles as represented in the accompanying cut. The muzzles are referred to as made in the finest manner possible, of the best leather, and as being adjustable for any

sized dog. The muzzles are made in Nos. 1, 2 and 4 sizes, each size being nested in three lengths. The company also manufacture dog collars, pug harness, &c.

Soft Steel Belt Fasteners.

F. W. O. Talcott, Providence, R. I., is offering the Acme steel belt hook herewith shown. The teeth rivet toward



Soft Steel Belt Fasteners.

the center of the fastener, giving them, it is stated, a very strong grip in the belt. The fastener is especially designed for belts which are running at high speed and belts that have become old, oily and that are frequently shipped by hand. The manufacturer claims that the points or teeth being long and sharp pierce the belt easily, and that as they stand diagonally with the length of the belt they do not cut away so much of its strength as if they cut continuous holes or slits straight across the end of the belt. For convenience in introducing the fasteners, trial packages containing 100 hooks of assorted sizes will be delivered by the manufacturer to any address in the United States for \$1.50.

THE WILCOX & HOWE COMPANY, Birmingham, Conn., are at present giving a good deal of attention to Steel Forgings for Bicycles, Agricultural Implements, &c., it being their intention to push this line in connection with their Carriage Hardware business. In Bicycle Forgings they have made quite a start, and it is their intention very soon to issue a catalogue relating especially to these goods.

IN OUR ISSUE of June 14, page 1170, attention was called to the high standing of Coleman's work on "Mechanics' Liens in the State of Illinois." The author of that work, J. A. Coleman, Hartford Building, Chicago, makes an exclusive specialty of mechanics' liens, as will be found from his advertisement published elsewhere.

THE BALL BEARING COMPANY, Boston, Mass., of which George F. Simonds is president and Edward P. Noyes treasurer, are now prosecuting the Ball Bearing enterprise until recently conducted under the personal name of Mr. Simonds. This is referred to as a continuance and not an overturn, the company entering upon all privileges and facilities heretofore enjoyed and used by Mr. Simonds personally. Some little time must necessarily pass before all departments of the company will be in complete running order, but they advise us that something can be done in the direction of meeting calls from this time on, delays being reduced to a minimum. It is expected that a number of sets of Carriage Bearings of the $1\frac{1}{4}$ and 1 inch sizes will soon be ready for delivery. Following these, $\frac{7}{8}$, $1\frac{1}{8}$ and $1\frac{3}{8}$ inch sizes will be prepared. From that point on the business will be extended along the lines indicated by the

inquiries made. The company, while thus reorganized for business, have considerable yet to do in order that their output shall from the start be carefully prepared, preferring to delay possible customers somewhat in their requirements rather than to fail in the degree of satisfaction which shall be given to them.

Hoffman's Vault and Library System.

The Geuder & Paeschke Mfg. Company of Milwaukee, Wis., have absorbed the business of the Hoffman-Keefe Office File Company, and are now manufacturing that company's specialties, among which are the Hoffman vault and library fixtures, recently

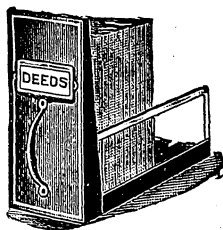


Fig. 1.—Document File.

brought out. By this system, large vaults for the use of banks, merchants and manufacturers, requiring a large amount of room for the storage of valuable papers, are fitted up with metal shelving, drawers, compartments, files for letters, &c. Illustrations are here-

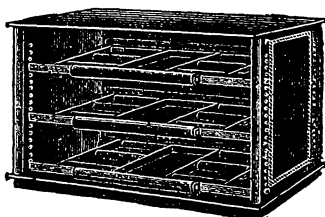


Fig. 2.—Roller Book Shelves.

with given of some of the features of the system. Fig. 1 is a file for compressing documents. The compressor grips the papers from the center down and squeezes them. The file comes

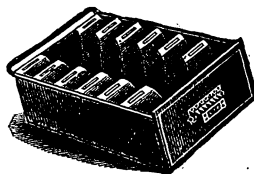


Fig. 3.—Check Sorter.

clear out of its compartment and hangs there. The papers can be shuffled any way, as the file has no sides. A special kind is made for bank checks. Fig. 2 represents a set of roller book shelves intended for storing large, heavy office books. They are laid flat and given an even bearing on rollers to prevent friction or wear. Fig. 3 shows a check sorter which has been found very convenient in banks. In Fig. 4 is shown a

metal cabinet. Fig. 5 represents a nest of safety deposit cells, each with its own key. These are frequently used by

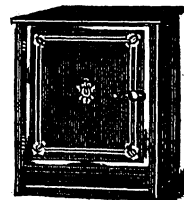


Fig. 4.—Metal Cabinet.

large companies, each of whose officers desires a storage place for his own personal documents and valuables. Fig. 6

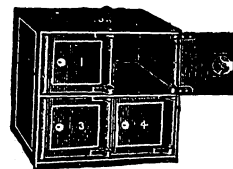


Fig. 5.—Safety Deposit Cells.

is a vault omnibus or movable case, which is found a most convenient article in offices in which a large number of books and papers are in daily

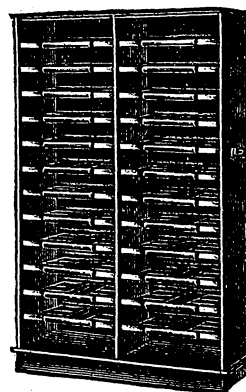
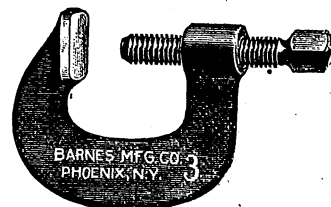


Fig. 6.—Movable Case.

use outside of the vault. It is made with roller book shelves. The whole case is mounted on double wheel anti-friction casters, so that one person can easily run it in and out of the vault. The casters are hidden by the risers of the base.

The Phoenix Steel Machine Shop Clamp.

The cut here shown is of a clamp being introduced by the Barnes Mfg.



Steel Machine Shop Clamp.

Company, Phoenix, N. Y. The clamps are made from refined steel castings, with United States standard steel screws

having hardened points, the screws running to the foot of the clamp. The makers offer the clamp to meet the demand for strong, first-class goods for general machine shop use, at prices, it is stated, which any machine shop can afford to pay. The point is made that heretofore this style of clamp has only been obtainable in the form of high priced drop forgings. The clamps are made in five sizes, opening from $1\frac{1}{4}$ to $4\frac{1}{4}$ inches.

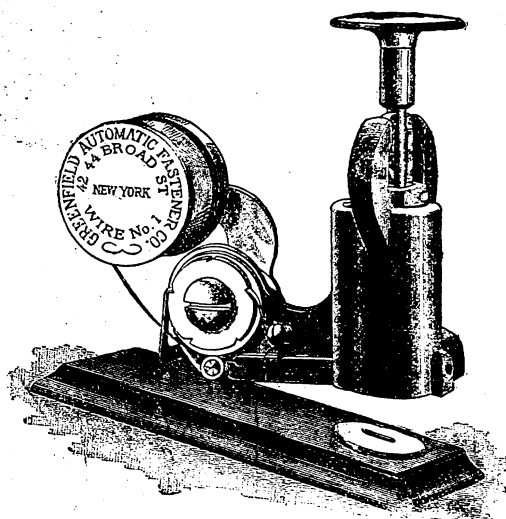
The Greenfield Automatic Fastener.

The accompanying cut shows a voucher fastener put upon the market by the Greenfield Automatic Fastener Company, 42-44 Broad street, New York. It is described as being made strong and durable, of the best material, and so simple in its parts that there is nothing to get out of order. With one operation of the hand, it is stated, the wire is rolled from the spool, placed

water pan is light and removable, made of galvanized iron 13 x 15 inches in size and 7 inches high, taking a 10 x 15 inch cloth without folding. The rollers are described as being of solid white rubber, $1\frac{1}{4}$ inches in diameter and 11 inches long. The point is made that owing to the width of the rollers no folding of clothes is necessary. The roller bearings are of composition metal, which, it is stated, is durable, and that it will not rust. The manufacturers state that the rubber sheets used with the machine are indestructible; that as a result of their use perfect *fac-simile* impressions are obtained, and that blurred, faint or indistinct copies are impossible.

Non-Magnetic Watch.

The illustration here given represents a non-magnetic watch offered by Robert H. Ingersoll & Brother, 65 Cortlandt

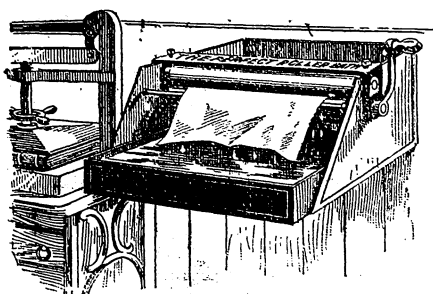


The Greenfield Automatic Fastener.

in position, measured and cut the required length, the staple made, driven through the paper or material to be fastened, and neatly and securely clinched. The point is made that one spool of wire is equal to 1200 of ordinary fastenings in the amount of work it will accomplish. The manufacturers claim that the simplicity of the machine, the rapidity with which it does its work, the strength of its fastenings and the neatness of its execution are points which recommend it for use.

The Perfect Roller Bath.

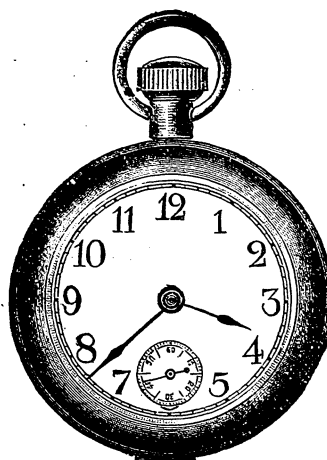
Rockwell & Rupel Company, 51-53 La Salle street, Chicago, are offering a



The Perfect Roller Bath.

roller bath as shown herewith. It is finished in maroon, nicely striped, the arch and crank being japanned. The

street, New York. It is stated that besides the special construction of the movement, the case is made of special non-conducting metal, in satin finish. The manufacturers remark that in this age of electricity dynamos are found in almost every town, that the number of people employed in connection with



Non-Magnetic Watch.

them is very large, and that the larger proportion of them are deprived of the use of a watch during working hours. The watch is designed especially for such persons as well as the general public and is intended to retail at \$2.

Bailey Automatic Bicycle Brake

In the accompanying illustrations is shown the Bailey automatic brake for bicycles, introduced by Bailey Mfg. Company, 207 South Canal street, Chicago.

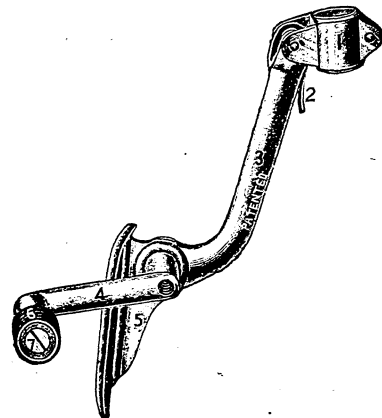


Fig. 1.—Bailey Automatic Bicycle Brake.

The brake as shown in Fig. 1 is made of steel, drop forged, and weighs, it is stated, 7 ounces. It is attached by a clamp to the seat standard at or near its lower end. The lever is adjusted so as to just clear the lower reach of the

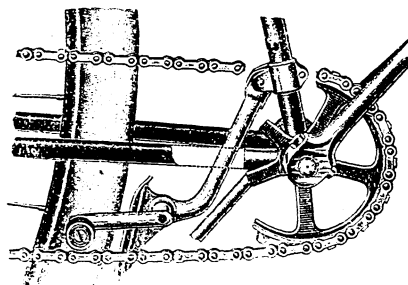


Fig. 2.—Position of Brake when Riding.

chain when forward pressure is being applied to the pedals, as in Fig. 2. It is stated that the instant the lower reach of the chain straightens from reverse action or holding back on the pedals it catches the brake lever, raises and carries it backward, applying the brake as in Fig. 3. If but a light brake action

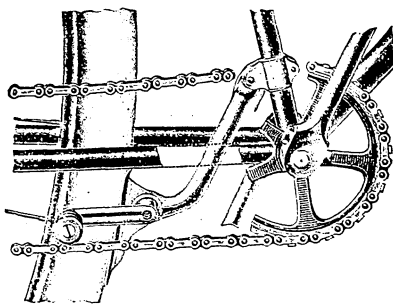


Fig. 3.—Position of Brake when Stopping

is desired, only light reverse pressure is put upon the pedals; but if heavier brake action is wanted, then heavier reverse pressure is used, and as soon as back pressure on the pedals ceases the brake is released. It is remarked that the rider is not put out in any way when using the brake, but retains his usual position with his hands grasping the handles of his wheel and with the feet on the pedals, precisely the same as though no brake were in action; also that so unobtrusive is the device that the rider would not know it was on the machine were it not for the instant and effective aid it gives him when wanted. The brake is nicely finished, fully nickered, and, it is stated, fits all safeties and is easily put on.

Tower's Revolving Wardrobe Hook.

Grand Rapids Brass Company, 156-166 Court street, Grand Rapids, Mich.,

is 5½ inches long, with jaws ½ inch thick, which open 1½ inches. The tool weighs 6 ounces. The manufacturer states that all parts are made to a gauge and are interchangeable, and that the

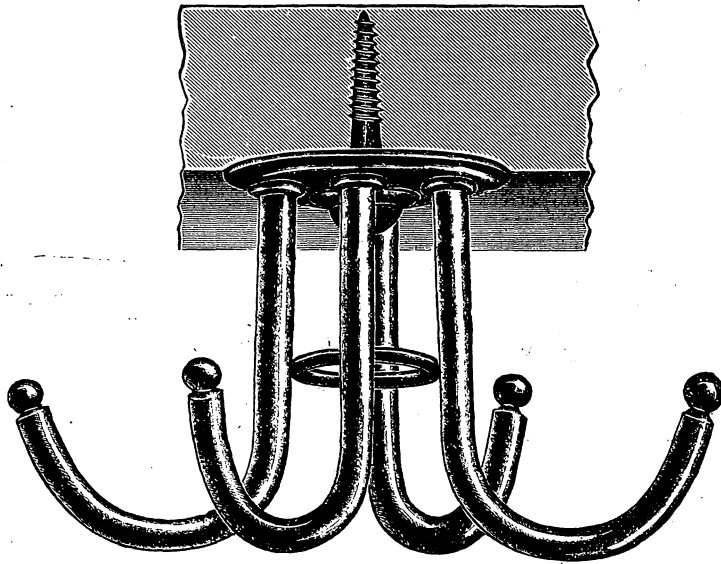


Fig. 1.—Tower's Revolving Wardrobe Hook.

are offering the wardrobe hook illustrated in Fig. 1. The hook is adapted to use on the under side of shelves in closets and wardrobes, and it is fastened in place by a screw from the under side. A feature of the hook is that it revolves, allowing it to be turned around to select the garment wanted. In Fig. 2 a bracket is shown which can be adjusted to hang the hook any distance from the wall up to 8 inches. The dotted lines show the position of

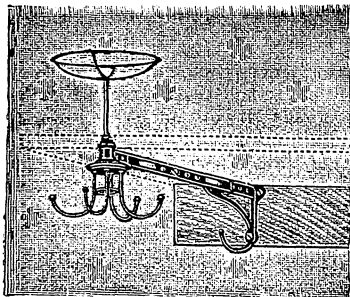
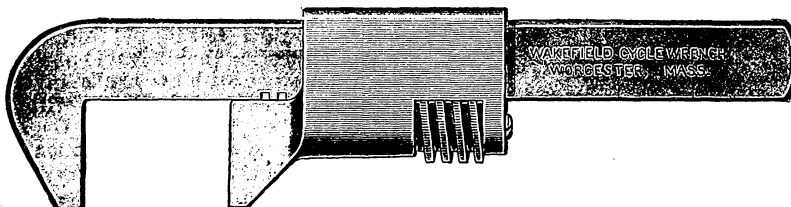


Fig. 2.—Revolving Wardrobe Hook and Shelf Bracket.

the shelf, which is easily supported by the brackets, without interfering in the least with their use. The brackets may be placed the distance apart that wardrobe hooks usually are, or as far apart as desired. The top of the revolving hook is tapped to receive the wire standard for ladies' hats, which is sold separately.

Wakefield Cycle Wrench.

J. E. Wakefield, Worcester, Mass., is putting on the market the wrench



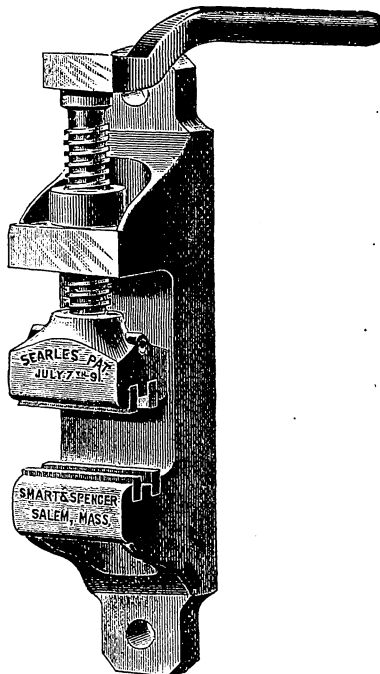
Wakefield Cycle Wrench.

represented in the accompanying cut. It is made entirely of steel, hardened, well finished and nickel plated. The wrench

wrench is strong, light, quick in action and durable.

Searle's Pipe Vise.

The accompanying cut represents a pipe vise put on the market by Smart &



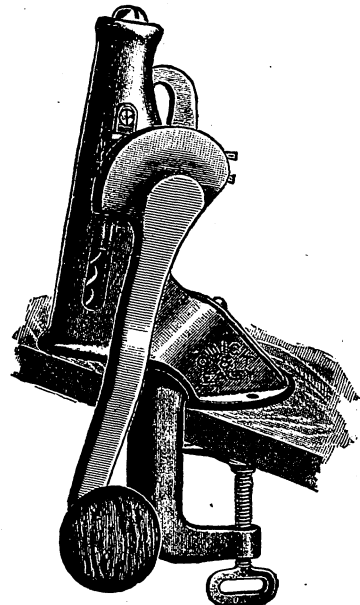
Searle's Pipe Vise.

Spencer, Salem, Mass. The vise is described as having a body of cast iron, a screw of steel and four gripping jaws of

made that when the jaws become dull from constant use they may be easily sharpened, or they may be renewed at a slight cost, thus making the vise almost indestructible. In the No. 2 vise the jaws are 2 inches long, thus giving a bearing on the pipe of 8 inches, and requiring, it is stated, but very little pressure to hold firmly the smoothest pipe. It is remarked that the jaws are diametrically opposite and that the strain on all four edges of the jaws is equal. The manufacturers claim that the vise is simple in construction, durable and effective; that it is light and easily carried with other tools; that the form is such that it can be readily attached to a post or any convenient place, and that it will hold brass or iron pipe with the greatest firmness without the slightest injury. The vise is made in sizes Nos. 1, 2 and 3. No. 1 holds from ½ to 1 inch iron pipe, No. 2 from 1 to 2 inch iron pipe and No. 3 from 2 to 3 inch iron pipe.

Walker's Quick and Easy Cork Puller.

Erie Specialty Mfg. Company, Erie, Pa., are offering the cork puller shown herewith. In operation the bottle is pressed firmly into the mouth of the



Walker's Quick and Easy Cork Puller.

machine and in line with it and the lever pulled forward until it stops. This movement draws the cork, while the reverse movement of the lever expels and drops the cork. The makers remark that the machine is especially adapted for rapid work, as it cuts the wire when pulling the cork and breaks no bottles. A feature which is referred to as being peculiar to this puller is the arrangement for quickly changing the worm and nut in case the worm bends or breaks or the nut wears out, without removing the machine. The worm may be removed by taking out the screw at the top of the machine, and the nut at the bottom through which the worm runs is removed by taking out two small screws. The machine is nicely finished in nickel, strongly constructed, and each machine is packed in a box, with a clamp and an oil can. The points of excellence claimed by the manufacturers for the machine are rapidity and ease of operation, simplicity and strength in its construction and the ease and quickness of removing parts without taking the machine from its position.

Current Hardware Prices.

JUNE 27, 1894.

NOTE.—The quotations given below represent Current Hardware Prices, whether made by manufacturers or jobbers. They apply to such quantities of goods as are usually purchased by retail Hardware merchants. Very small orders and broken packages often command higher prices.

The character @ is used to indicate a range of price: thus discount 50 & 10% @ 50 & 10 & 5%, signifies that the goods in question are sold at prices ranging from 50 & 10% to 50 & 10 & 5%.

Adjusters, Blind—

Domestic..... \$ dos \$2.00, 88% @ 88% 10%
Excelsior..... \$ dos \$10.00..... 50 & 10 & 5%
North's..... \$ dos \$10.00..... 50 & 10 & 5%
Zimmerman's—See Fasteners Blind.

Ammunition—See Caps, Cartridges, Shells, &c.

Anvils—

American—

Eagle Anvils, \$ d 94..... 15 @ 15 & 5%
Horse shoe brand, Wrought..... 11 @ 11 & 5%
Moore & Barnes Mfg. Co..... 39 & 5%

Imported—

Armstrong Mouse Hole..... 94 @ 10 & 5%
S. & H., machine finished..... 10% @ 11%
Trenton..... 94 @ 10 & 5%
Wilkinson's..... 10% @ 10 & 5%
Peter Wright's..... 10% @ 11%

Anvil Vise and Drill—

Allen Anvil and Vise \$3.00..... 40 & 10%
Cheney Anvil and Vise..... 25%
Millers Falls Co., \$18.00..... 20%
Star..... 45 & 5%

Apple Parers—See Parers Apple, &c.

Augers and Bits—

Boring Machine Augers..... 70 @ 70 & 10%
Car Bits, 12-in. twist..... 50%
Common Augers and Bits..... 70 @ 70 & 10%
Cincinnati Bell-Hangers' Bits..... 30 & 10
Forster Pat. Auger Bits..... 40%
Jennings' Pattern Car Bits..... 40%
Jennings' Pattern Auger Bits..... 60%
J. E. Jennings & Co., No. 10, extension lip..... 40%
O. E. Jennings & Co., No. 30..... 60%
C. E. Jennings & Co., Auger Bits, set 32% quaters, No. 5, 8, 10, No. 30, \$3.50 & 25%
Russell Jennings and Bits..... 35 & 10
Sears' Patent Single Twist..... 45%
H. Hommedieu Car Bits..... 15 & 10
Pugh's Black..... 20%
Pugh's Jennings Pattern..... 30%
Snell's Bits..... 60 & 5 @ 80 & 10%

Bit Stock Drills—

Cleveland..... 50 & 10 & 5%
Cincinnati..... 30 & 10
Cincinnati, for metal..... 45 & 10
Morse Twist Drills..... 50 & 10 & 5%
New Process Twist Drill Co..... 50 & 10 & 5%
Standard..... 50 & 10 & 5%
Syracuse, for metal..... 50 & 10
Syracuse, for wood (wood list), 30 & 50 & 5%

Expansive Bits—

Clark's small, \$18; large, \$28..... 35 @ 35 & 10%
Ives' No. 4, \$ dos \$80..... 40%
Sears' No. 1, \$28; No. 2, \$18..... 35 @ 40%
Sears' No. 2, \$48..... 20%
Swan's..... 40%

Gimlet Bits—

Bee..... 25 @ 25 & 10%
Common..... \$ gross \$2.50 @ \$3.00
Diamond..... \$ dos \$1.25 @ 40 & 10%
Double Cut:
Hartwell's..... \$ gro. \$10.00, 40 & 10%
Douglas's..... 40 & 10 @ 50%
Ives..... 60 & 10 @ 60 & 10 & 5%
Shepardson's..... 45 & 10 @ 45 & 10 & 5%

Hollow Augers—

Bonney's Adjustable, \$ dos \$48..... 50%
Cincinnati Adjustable..... 25 & 10%
Cincinnati Standard..... 25 & 10%
Douglas's..... 33% @ 33% & 10%
French, Swift & Co. (Becher)..... 33% @ 33% & 10%
Ives'..... 33% @ 33% & 10%
Ives' Expansive, each \$4.50..... 30 & 10%
Sears'..... 30 & 10%
Universal Expansive, each \$4.50..... 30%
Wood's, \$ dos, \$48..... 25 & 10%

Ship Augers and Bits—

L'Hommiedieu's..... 15 & 10 @ 15 & 10 & 5%
Snell's..... 25 @ 25 & 10%
Snell's Ship Auger Pat'n Car Bits..... 15 & 10 @ 15 & 10 & 5%
Watrous's..... 25 @ 25 & 10%

Awl Hafts—See Hafts, Awl.

Awls—

Brad, Handled..... \$ gr. \$2.50 @ \$3.00
Brad, Shoulders..... \$ gr. \$1.30 @ \$1.40
Feg, Pat..... \$ gr. \$3.50 @ \$3.80
Feg, Should..... \$ gr. \$1.50 @ \$1.55
Scratch, Handled..... \$ gr. \$4.00 @ \$4.50
Scratch, Socket..... \$ dos \$1.10 @ \$1.20

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

First quality, best brands..... \$5.00 @ \$8.50
First quality, other brands..... 5.50 @ 6.00
Beveled add 50¢ per doz.

Axle Grease—See Grease, Axle.

Axles—

o. 1 Common..... 34 @ 34%
o. 2 Common..... 44 @ 44%
Nos. 7 to 14..... 70%
Nos. 15 to 28..... 47%
Nos. 19 to 22..... 70%
Concord Axles, loose collar..... 40%
Concord Axles, solid collar..... 40%
Tubular Axles..... 50

Bag Holders—See Holders, Bag.

Balances—

Sash—
Caldwell, low list..... 30%
Pullman..... 80%

Spring—

Spring Balances..... 40 @ 40 & 10%
No. 2000..... 20 80
Chatillon, \$ dos..... \$0.50 0.95 1.75 net
Chatillon Straight Balances..... 40 @ 40 & 10%
Chatillon Circular Balances..... 50 & 10%

Barb Wire—See Wire, Barb.

Bars—

Crow—

Cast Steel..... \$ d 2 1/2 @ 3 1/2
Iron, Steel Points..... \$ d 2 1/2 @ 2 3/4

Basins, Wash—

Standard Fiberglass, No. 1, 10 1/2 in., \$1.30;
12-inch, \$2.00; 13 1/2 in., \$2.50; 15-inch, \$3.00.

Beams, Scale—

Scale Beams, List Jan. 12, '82..... 60 & 10 @ 60 & 10 & 5%
Chatillon's No. 1..... 40%
Chatillon's No. 2..... 50 & 10 @ 50 & 10 & 5%
Custer's..... 33 & 5%

Beaters—

Egg—

Bryant's..... \$ gross \$14.00
Double (H. & R. Mfg. Co.), \$ gro. No. 0 \$12.00; No. 1, \$15.00; No. 2..... \$36.00
Dover..... \$ dos \$1.00 @ \$1.20
Dover (Standard Co.)..... \$ dos \$1.00
Duplex (Standard Co.)..... \$ dos \$1.00
Duplex Extra Heavy (Standard Co.)..... \$ dos \$3.50
Easy (H. & R. Mfg. Co.)..... \$ gro \$12.00
Improved Acme (H. & R. Mfg. Co.)..... \$ gro \$3.00
Silver & Co..... \$ dos \$5.50
Spiral..... \$ gro \$4.25 @ \$4.50
Triple (H. & R. Mfg. Co.)..... \$ gro \$16.50

Culinary—

Keystone, P. D. & Co., Each, No. 1, \$1;
No. 2, \$2..... 20%

Bells—

Cow—

Common Wrought..... 60 & 10%
Kentucky Durham..... 70 & 10%
Kentucky, Sargent's list..... 70 & 10%
Kentucky, "Star"..... 70 & 10%
Texas State..... 50 & 10 @ 50 & 10 & 5%
Western, Sargent's list..... 70 & 10%

Door—

Crank, Brooks'..... 50 & 10 & 5%
Crank, Cone's..... 10%
Crank, Connel's..... 20 & 10%
Gong, Abbe's..... 33% @ 33%
Gong, Barton's..... 40 & 10 @ 40 & 10 & 5%
Gong, Yankee..... 45 & 10%
Lever, R. & E. Mfg. Co.'s..... 60 & 10 & 5%
Lever, Sargent's..... 60 & 10%
Lever, Taylor's Bronzed or Plated, net
Pull, Taylor's Japanned..... 25 & 10%
Pull, Brooks'..... 50 & 10 & 5%

Electric—

Bigelow & Dowse..... 20 @ 20 & 10%
Wollensak's..... 20 @ 20 & 10%

Hand—

Extra Heavy Brass..... 70%
Light Brass..... 70 & 10 @ 70 & 10 & 5%
Silver Chime..... 33% @ 33%
White..... 70%
Globe Cone's Patent..... 25 & 10 @ 25 & 10 & 5%

Miscellaneous—

Call..... 45 @ 50%
Farm Bells..... \$ d 2 1/2 @ 3
Steel Alloy Church and School Bells..... 50%

Bellows—

Blacksmith's..... 60 & 10 @ 70%
Hand Bellows..... 40 & 10 @ 50%
Molders'..... 40 & 10 @ 50%

Belting, Rubber—

Common Standard..... 75 & 10 @ 75 & 10 & 5%
Extra..... 60 & 10 @ 50 & 70%
Standard..... 70 & 10 @ 75%
N.Y.B. & P. Co., Carbon..... 60 & 10 & 5%
N.Y.B. & P. Co., Double Diamond..... 60%
N.Y.B. & P. Co., 1846 Para..... 40 & 10%

Bench Stops—See Stops, Bench

Benders and Upsetters, Tire—

Detroit Perfect Tire Bender 15 & 15 1/2 in.
Green River Tire Benders and Upsetters..... 20%
Stoddard's Lightning Tire Upsetters..... 25%

Bits—

Auger, Gimlet, Bit Stock Drills, &c., see Augers and Bits.

Bit Holders—See Holders.

Blind Adjusters—See Adjusters, Blind.

Blind Fasteners—See Fasteners, Blind.

Blind Staples—See Staples, Blind.

Blocks—

Cleveland Block Co., Mal. Iron..... 50 & 10 @ 60 & 10%
Moore's Novelty, Mal. Iron..... 50 @ 50 & 5%
Sure Grip Steel Tackle Block..... 25 @ 25 & 10%
See also Machines, Hoisting

Bolts—

Carriage, Machine, &c.—

Com. list June 10, '84..... 80 & 10 @ 80 & 10 & 5%
Genuine Eagle, Norway, list Oct. '84..... 80 & 5 @ 80 & 10%
Eagle, Norway, list Oct. '84..... 80 & 5 @ 80 & 10%
Phila. pattern, list Oct. 7, '84..... 80%
R. B. & W., old list..... 70%
Bolt Ends, list Jan. 1, 1890..... 80 & 10 @ 80 & 20%
Machine, list Jan. 1, 1890..... 80 & 10 @ 80 & 20%

Door and Shutter—

Cast Iron Barrel Square, &c..... 75 & 10 @ 75 & 10 & 5%
Cast Iron Chain (Sargent's list)..... 65 & 10 @ 65 & 10 & 5%
Cast Iron Shutter Bolts..... 75 & 10 @ 75 & 10 & 5%
Ives' Patent Door Bolts..... 60 & 10 @ 60 & 10 & 10%
Wrought Barrel..... 75 & 10 @ 80%
W. B. K. Flush Common..... 60 & 10 @ 60 & 10 & 10%
W. B. K. Flush Brass Knob..... 50 & 10 @ 50%
W. B. K. Shutter, Sargent's list..... 60 & 10%
W. B. K. Shutter, all iron, Stanley's..... 60% @ 70%
Wrought Square..... 75 & 10 @ 80%
W. B. K. Flush, Sargent's list..... 60 & 10%
W. B. K. Flush, Stanley's list..... 60 & 10%

Stove and Plow—

Plow..... 60 & 10 @ 60 & 10 & 10%
Stove..... 65 @ 70%
R. B. & W., Plow..... 55%

Tire—

Common, list Feb. 28, '83..... 70 @ 70 & 10%
American Screw Company
Norway, Phila., list Oct. 16, '84..... 75%
Eagle, Phila., list Oct. 16, '84..... 80%
Bay State, list Feb. 28, '83..... 70%
Port Chester Bolt and Nut Company:
Empire list Feb. 28, '83..... 70%
Keystone, Philadel., list Oct. '84..... 80%
Norway, Phila., list Oct. '84..... 75%
R. B. & W., Philadel., list Oct. 16, '84..... 80%

Borers, Tap—

Common and Ring..... 20 & 10%
Clark's..... 33% @ 33%
Enterprise Mfg. Co..... 25%
Ives' Tap Borers..... 33% @ 33%

Boring Machines—See Machines, Boring.

Bow Pins—See Pins, Bow.

Boxes, Letter—

Tatum's..... 40

Boxes, Wagon—

Per B..... 24%

Boxes, Miter.

Spilker's Excelsior, 3 in. \$7.50, 4 in. \$8.50, 5 in. \$13.00, 6 in. \$15.00..... 20%

Braces—

American Bit Brace and Tool Co.:
Nos. 10, 12, 20..... 60 & 10%
Nos. 11, 21, 24, 27..... 70 & 10%
Nos. 22, 23, 25..... 60 & 10 & 5%
Nos. 23, 26, 36, 37..... 70 & 10 & 5%
Amidol..... 70 & 10 & 5%
Barker's Imp'd Plain..... 75 & 10 @ 80%
Barker's Imp. Nickeled..... 85 & 10 @ 70%
Ratchet..... 75 & 10 @ 80%
Eclipse Ratchet..... 60%
Globe Jawed..... 40 @ 40 & 10%
Corner Brace..... 40 @ 40 & 10%
Universal, 8 in., \$2.10; 10 in. \$2.25
Buffalo Ball..... \$1.10 @ \$1.15
Barber's..... 60 & 10%
Bartholomew's..... 50 & 5%
Armstrong's..... 50 & 5%
Common Ball, American..... \$1.00 @ \$1.10
Davis Patent..... 50 & 10%
Fray's Gear, Spigot 10 in. 60 & 10 & 5%
Fray's Nos. 70 to 120, 81 to 123, 207 to 414..... 50 & 10 & 5%

Ives' New Haven Novelty..... 70 @ 70 & 5%
New Haven Ratchet..... 60 & 5 @ 60 & 10%
Barber Ratchet..... 60 & 5 @ 60 & 10%
Barber's..... 60 & 5%
Spigot..... 30 & 5 @ 30 & 10%
P. S. & W. Co., Peck's Patent..... 60%
Rose & Johnson..... 50%
Saxton's..... 75 & 10 @ 80%
Barker's Imp. Nickeled..... 85 & 10 @ 70%
Ratchet, Polished..... 60 & 10 @ 60%
Ratchet, Nickeled..... 40 & 10 @ 40%
Buffalo Ball..... net, \$1.10 @ \$1.15

Brackets—

Shelf, fancy, Sargent's list..... 70 @ 70 & 10%
Other makes at a wide range of prices.
Shelf, plain..... 85 @ 70%
Regular, list..... 60 & 10 @ 70 & 10%
Bradley Shelf Brackets..... 70 & 10%

Bright Wire Goods—See Wire.

Broilers—

Hens Self-Per doz..... 9 10 9 11
Bridging, Per doz..... \$4.50 5.50 6.50
Morgan Odorous..... \$ dos \$12.50
New Haven..... 50%
Queen City..... 33%
Wire Goods Co..... 65 & 10%
Buckets, Well and Fire—See Pails, Galvanized.

Bull Rings—See Rings, Bull.

Butcher's Cleavers—See Cleavers, Butchers.

Butts—

Brass—

Cast Brass, Fast..... 33% @ 10%
Cast Brass, Loose Joint..... 33% @ 10%
Cast Brass, Tiebout's..... 50%
Wrought Brass..... 30 & 10 @ 30 & 20%

Cast Iron—

Fast Joint, Broad..... 80 @ 80 & 5%
Fast Joint, Narrow..... 80 @ 80 & 5%

Loose Joint, Japanned..... 75 & 10 @ 80%

Loose Joint, Jap. with Acorns.....
Loose Pin, Acorns.....
Loose Pin, Acorns, Japanned.....
Loose Pin, Acorns, Japanned, Plated Tips.....
Mayer's Hinges.....
Parliament Butts.....

Wrought Steel—

Fast Joint, Broad.....
Fast Joint, Lt. Narrow.....
Inside Blind, Light.....
Inside Blind, Regular.....
Loose Joint, Broad.....
Loose Pin.....
Table Butts, Back Flaps, &c.....
Bronzed Wrought Butts.....

Cages, Bird—

Henry's Brass:
3000, 5000, 1100 series..... 10%
1200 series..... 40%
200, 300, 600 and 900 series..... 40 & 10 @ 50%
Henry's Bronze:
700, 800 series..... 40 & 10 @ 50%
Henry's Enameled..... 40 & 10 @ 50%

Calipers—See Compasses.

Calks Toe—

Burke's, One Prong, Blunt..... 4 @ 50
Burke's, One Prong, Sharp..... 4 @ 50
Burke's, Two Prong, Blunt..... 5 @ 50
Burke's, Two Prong, Sharp..... 5 @ 50
Gautier, One Prong, Blunt..... 5 @ 50

Can Openers—See Openers, Can.

Cans Milk—

S. S. & Co.: 5-gal., \$3.00; 8-gal., \$4.40;
1-gal., \$4.75 each..... 40 & 10

Cans Oil—

Galvanized Blue Band, 1 gal., \$ dos \$2.25
Galvanized Blue Band, 5 gal., Tip-Top..... \$ dos \$12.00
Galvanized Blue Band, 5 gal., Faucet..... \$ dos \$2.00
Glass Oil, Friend..... \$ dos \$2.75

Caps—Percussion—

Hicks & Goldmark's and Union Metallic Cartridge Co..... 10%

Eley's D. Waterproof, Central Fire..... \$1.60

E. B. Grand Edge, Cent. Fire, 1-10's \$1.75 @ \$1.50
E. B. Trimmed Edge, 1-10's..... \$1.75 @ \$1.50
F. L. Waterproof, 1-10's..... \$1.75 @ \$1.50
G. D..... \$1.75 @ \$1.50
Musket, Waterproof, 1-10's..... \$1.75 @ \$1.50
S. B. Genuine Imported..... \$1.75 @ \$1.50

Primers

Berdan Primers, \$1.00.....
B. L. Caps (Sturtevant Shells) \$1.00.....
All other Primers, \$1.20.....

Cards—

Watson's Cotton, Wool, Horse and File, list January 28, 1891..... 25%

Carpet Stretchers—See Stretchers, Carpet.

Cartridges—

B. B. Caps, Cent. Ball, Swgd., \$1.85 @ \$1.90
B. B. Caps, Round Ball, \$1.60 @ \$1.65
Blank Cartridges, except 22 and 28 cal., additional 10% to above discounts.
Blank Cartridges, 22 cal., \$1.75.....
Blank Cartridges, 32 cal., \$3.50.....
Cent. Fire, Military and Sporting 15 & 25 & 32 Cent. Fire, Pistol and Rifle..... 25 & 5 @ 25%
Primed Shells and Bullets..... 15 & 5 @ 25%
Rim Fire Cartridges..... 50 & 5 @ 50%
Rim Fire Military..... 15 & 5 @ 25%

Carpet Sweepers—See Sweepers, Carpet.

Halters—

Covert's Adj. Rope Halters.....	40¢25
Covert's Adj. Web Halters.....	55¢25
Covert's Hemp Horse and Cattle Ties.....	50¢10
Covert's Jute Cattle Ties.....	70¢10
Covert's Jute Horse Ties.....	70¢25
Covert's Rope, 1/4 in., Hemp.....	50¢25
Covert's Rope, 1/2 in., Hemp.....	60¢10
Covert's Saddle Works Halters.....	35¢45
Covert's Saddle Works Handy Web Halters.....	35¢45
Covert's Saddle Works Horse and Cattle Ties.....	35¢45

Hammers—**Handled Hammers—**

Atha Tool Co.....	50¢10
Buffalo Hammer Co.....	60¢10
Humason & Beckley.....	Verres.....
Cheney's Claw.....	40¢10
Cheney's Machinists & Riveting.....	50¢50
C. Hammond & Son.....	10¢10
Magnetic Tack, Nos. 1, 2, 3, 1.25, 1.50 & 1.75.....	30¢10
Maydole's, list Dec. 1, '88.....	25¢10
Peck, Stow & Wilcox.....	40¢40
Fayette R. Plumb.....	40¢10
Artisans' Choice, A. E. Nail.....	40¢10
Riveting, Engineers' and B. S. Hand.....	60¢
Machinists' Hammers.....	60¢10
Regular Y. & P. A. E. Nail.....	50¢50
Other Hammers.....	50¢50
Sargent's.....	40¢10
Warner & Nobles, new list.....	25¢10

Heavy Hammers and Sledges—

3 lb and under.....	40¢10
5 to 10 lb.....	80¢30
Over 10 lb.....	80¢30
Wilkinson's Smiths.....	10¢10

Handcuffs and Leg Irons—

See Police Goods.

Handles—**Cross-Cut Saw Handles—**

Atkins.....	40¢
Champion.....	15¢
Ely's Perfection.....	40¢
Sensible per doz. Pr.....	\$5.00

Iron, Wrought or Cast—

Barn Door, per doz.....	20¢50
Bronze Iron Drop Latches.....	70¢10
Chest and Lifting.....	70¢10
Door or Thumb.....	70¢10
Nos.....	1 2 3 4
Per doz.....	\$0.90 1.00 1.08 1.35 1.50
Jap'd Store Door Handles—Nuts, 1.62, Plate, 1.10; no plate, 0.88.....	10¢
Boggin's Latches.....	25¢25

Wood—

Anger, assorted.....	gr 5.00
Anger, large.....	gr 7.00
File, assorted.....	gr 2.75
Brad Ayl.....	gr 2.00
Apple Firmer Chisel, ass'd.....	gr 5.00
Apple Firmer Chisel, large.....	gr 6.00
Hickory Firmer Chisel, ass'd.....	gr 4.50
Hickory Firmer Chisel, large.....	gr 5.00
Socket Firmer Chisel, ass'd.....	gr 3.00
Socket Firmer Chisel, large.....	gr 3.00
Chisel, Fibre Head.....	33¢
Hammer, Hatchet, Axe, &c.....	40¢40
Hoe, Rake, Shovel, &c.....	60¢60
Pat. Auger, Douglass.....	set 1.25
Pat. Auger, Ives.....	set 1.00
Pat. Auger, Swan's.....	set 1.00
Saw and Plane.....	40¢10
J. B. Smith & Co's Pat. File.....	50¢

Hangers—

Barn Door, New England.....	70¢70
Barn Door, old patterns.....	70¢70
Barry.....	50¢
Best Anti-Friction.....	60¢10
Boes.....	60¢10
Carrier Steel Anti-Friction.....	50¢10
Champion.....	30¢10
Chicago Anti-Friction.....	30¢10
Climax Anti-Friction.....	55¢
Cincinnati Nos. 1, 2, 25; 3, 25.60; 4, 25.60.....	60¢60
Cronk's Patent.....	60¢10
Duplex (Wood Track).....	60¢10
Economy.....	60¢10
Hamilton Wrought Steel Track.....	55¢
Interstate.....	50¢10
Klinder's.....	50¢50
Lane's New Standard.....	50¢50
Lane's Standard.....	40¢40
Lund's Steel Parlor.....	50¢50
Magie.....	45¢10
Matchless.....	50¢10
Moody.....	45¢
Moore's Baggage Car Door.....	35¢45
Moore's Elevator.....	35¢45
Moore's Railroad.....	30¢10
Nickel, Steel, Nos. 0, 25; 1, 25; 2, 25.....	40¢10
Orleans Steel.....	50¢
Paragon Nos. 5, 6, 7 and 8.....	20¢10
Pendulum, Payson's.....	40¢40
Perfection.....	50¢10
Richards.....	30¢10
Samson Steel Anti-Friction.....	50¢10
Star.....	40¢10
Stearns' Anti-Friction.....	20¢10
Stearns' Challenge.....	25¢10
Sterling.....	50¢10
Terry's Ideal.....	50¢10
Terry's Model.....	50¢10
Terry's Shield.....	50¢10
Terry's Solid.....	50¢10
Terry's Wrought Single Strap.....	50¢10
Victor, No. 1, 15.00; No. 2, 15.50; No. 3, 13.00.....	50¢25
Warner's Pat.....	20¢10
Wild West.....	45¢10
Zenth for Wood Track.....	55¢

Harness Snaps—See Snaps.**Hatchets—**

American Axe and Tool Co.....	
Blood's.....	40 & 10
Hunt's.....	50
Hurd's.....	50
Mann's.....	50
Underhill's.....	50
O. Hammond & Son.....	10
Fayette R. Plumb.....	10
Collins.....	10
Buffalo Hammer Co.....	50 & 50
P. S. & W. Co.....	210
Sargent's & Co.....	210
Schultz, Lehigh Co.....	
Ten Eyck Edge Tool Co.....	

Hay and Straw Knives—

See Knives.

Hinges—**Blind Hinges—**

Clark's.....	75¢10
Nos. 1, 3, 5, 1888, Old Pattern.....	75¢10
Nos. 1 and 3, Tip Pattern.....	75¢10
No. 50 Buffalo Noiseless.....	40, 60
2 and 5.....	1, 1.75
Buffalo Reversible, Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.....	75¢10
No. 1, Cottage, for wood only.....	30¢10
No. 1, Diamond, for wood only.....	30¢10
Dixie L. & P., Nos. 3, 2 1/2, 2, 1 1/2, 1, 0, 4 and 5.....	75¢10
No. 25 Empire Reversible.....	75¢10
Lull & Porter, Nos. 3, 2 1/2, 2, 1 1/2, 1, 0, 4 and 5.....	75¢10
Mortise Gravity, Nos. 2, 4, 4 1/2, 6, 8, 9 and 10.....	50¢
Huffer.....	50¢10
Parker.....	75¢10
North's Automatic Blind Fixtures, No. 1, for Wood, 9.00; No. 3, for Brick, 11.50.....	75¢10
Reading's Gravity.....	75¢10
Sargent's Nos. 1, 3, 5, 11, 12, 13.....	75¢10
Shepard's.....	75¢10
Shepard, Lull & Porter, Nos. 3, 2 1/2, 2, 1 1/2, 1, 0, 4 and 5.....	75¢10
Buffalo Gravity Locking, Nos. 1, 3, 4 and 5.....	80¢10
Champion Gravity Locking, No. 75.....	80¢10
Clark's or Shepard's 1888, Old Pattern, Nos. 1, 3 and 5.....	75¢10
Clark's or Shepard's Tip Pattern, Nos. 1, 3 and 5.....	75¢10
Double Locking, Nos. 20 and 25.....	70¢50
Empire, Nos. 101 and 103.....	75¢50
Niagara Gravity Locking, Nos. 1, 3, 4 and 5.....	80¢50
Noiseless, Nos. 50, 60, 65 and 55.....	70¢
O. S. Lull & Porter, Nos. 3, 2 1/2, 2, 1 1/2, 1, 0, 4 and 5.....	75¢10
Pioneer, Nos. 080, 45 and 55.....	70¢
Steamboat Gravity Locking No. 10.....	80¢10

Gate Hinges—

Automatic.....	per doz \$12.50, 50¢
Clark's, Nos. 1, 2, 3.....	60¢10
N. E.....	per doz \$7.80, 60¢10
N. E. Reversible.....	per doz \$5.60, 60¢10
N. Y. State.....	per doz \$4.90, 60¢10
Shepard's Nos. 1, 2, 3.....	60¢10
Western.....	per doz \$4.20, 60¢10

Spring Hinges—

Acme.....	30¢
American.....	20¢
Bardsley's Patent Checking.....	15¢
Barker's Double Acting.....	25¢
Bommer's Japanese.....	30¢
Bommer's All other kinds.....	30¢
Buckman's.....	15¢20
Champion.....	30¢
Chicago.....	30¢
Columbia.....	per gross, \$10.00
Crown.....	20¢
Devoe, No. 1.....	per gross, \$13.00
Freeport.....	per gross, \$12.00
Geer's Spring and Blank Butts.....	40¢
Gem.....	20¢
Ideal No. 3.....	per gross \$8.00
J. G. C. Covered.....	per gross, \$30.00
Knoxall.....	per gross, \$12.00
New Idea No. 1.....	per gross, \$10.00
New Idea No. 2.....	per gross, \$10.00
New Idea Dbl. Acting.....	45¢
No. 10 Matchless.....	60¢
No. 25 Unbreakable.....	60¢
Oxford.....	20¢
Reliable.....	60¢
Rex.....	per gross, \$13.00
Samson.....	60¢60
Stearns' Noiseless Floor Hinge.....	20¢10
Surprise.....	per gross, \$12.00
Union Mfg. Co.....	25¢
Union Spring Hinge Co's list.....	20¢
Wiles, No. 1.....	per gross, \$16.00

Wrought Iron Hinges—

Corrug'd Strap and T.....	60¢10
Strap and T.....	60¢10
Plate Hinges, 8, 10 & 12 in.....	50¢
"Providence" over 12 in.....	40¢
Rolled Blind Hinges, Nos. 32 and 34.....	40¢10
Rolled Blind Hinges, Nos. 232 and 234.....	55¢10
Rolled Plate.....	70¢10
Rolled Raised.....	70¢10
Screw Hook and Eye.....	1/4 in. D 7 1/2
Screw Hook and Eye.....	1/2 in. D 5 1/2
Screw Hook and Eye.....	3/4 in. D 4 1/2
Screw Hook and Eye.....	1 1/4 in. D 3 1/2
Screw Hook and Eye.....	2 1/4 in. D 2 1/2

Hoes—

Scovill and Oval Pattern.....	50¢10
D. & H. Scovill.....	20¢30
Grub.....	60¢10
Lane's Crescent, Planters' Pattern.....	45¢50
Lane's Razor Blade, Scovill Pat.....	30¢50
Garden, Mortar, &c.....	70¢70
Magie.....	per doz \$4.00
Planter's Cotton, &c.....	70¢70
Warren Hoe.....	60¢60

Hog Rings and Rings—**Holisting Apparatus—****Hollow Ware—**

See Ware, Hollow.

Holders—**Bag—****Bit—****File and Tool—****Sash—****Hooks—****Cast Iron—****Bird Cage, Reading, List.....****Clothes Line, Sargent's List.....****Celling, Sargent's List.....****Clothes Line, Moore's.....****Clothes Line, Reading List.....****Coat and Hat, Moore's.....****Coat and Hat, Reading.....****Coat and Hat, Sargent's List.....****Hammock, E. C. Stearns & Co., per doz.....****Harness, Reading List.....****Wire—****Atlas, Coat and Hat.....****Barry Hat and Coat.....****Indestructible Coat and Hat.....****Staples Ceiling Hooks.....****Williamson's Bird Cage Hooks, List April, 1892.....****Wire Coat and Hat, Gem, list April, 1892.....****Wire Coat and Hat, Miles, list April, 1892.....****Wire Coat and Hat, Standard.....****Bright Wire Goods—See Wire.****Wrought Iron—****Cotton, per doz.....****Cotton Pat. (N. Y. Mallet and Handle) Wks.....****Tassel and Picture, T. & S. Mfg. Co.....****Wrought Staples Hooks.....****Miscellaneous—****Bush.....****Fish Hooks, American.....****Grass, No. 2, \$2.00; No. 3, \$2.10; No. 4, \$2.25.....****Hooks and Eyes—Brass.....****Hooks and Eyes—Malleable Iron.....****Noll's Grass.....****Whiffletree—Patent.....****Bench Hooks—See Bench Stops.****Horse Nails—See Nails, Horse****Horse Shoes—****See Shoes, Horse.****Hose, Rubber—****Competition, Fair quality.....****Competition, Low Grade.....****Standard.....****N. Y. B. & P. Co., Carbon.....****N. Y. B. & P. Co., Double Diamond.....****N. Y. B. & P. Co., 1816 Para.....****Cotton Garden, 3/4 in., coupled.....****Fair Quality.....****Good Quality.....****Huskers—****Blair's Adjustable.....****Blair's Adjustable Clipper.....****Hubbard's Solid Steel.....****Indurated Fiber Ware—****See Ware, Indurated Fiber.****Iron, Curling—****Nicol's Patent Curling Iron Heater.....****Silver Tipped Grace Darling Curling Iron, per doz.....****No. 65.....****No. 66.....****No. 67, Mustache.....****Sad—****From 4 to 10, at factory.....****B. B. Sad Irons.....****Chinese Laundry (N. E. But Co.).....****Chinese Sad.....****Crown Improved.....****Iron, No. 250, per set.....****Mahony's Troy Pol. Irons.....****Mrs. Potts' Sad Irons, per set.....****Small lots.....****National Self-Heating.....****New England.....****Pottstown, per set.....****Salamander Irons.....****Self-Heating.....****Self-Heating Tailors.....****Sensible Sad Irons, per set.....****Nos. 2.....****60.....****65.....****Sensible Tailors' Irons.....****Soldering—****Soldering Coppers.....****Covert's Adjustable, list Jan. 1, 1894.....****Tinker's Dread.....****Pinking.....****Pinking Irons, per doz.....****Jack Screws—See Screws.****Jacks, Wagon—****Daisy.....</**

Plate......45¢
Bosmer's Night Latches......15¢
B. & E. Mfg. Co., list Mar. 20, 1889......60¢10¢70
Sargent & Co., Ls. At. 1. 189......60¢10¢70
Warner's Burglar Proof. * doz. \$8.00, 50¢
Yale......net prices

Elevator—

Moore's.....38¢4¢

Padlocks—

Wrought Iron Padlocks:
Brittan, Graham & Mathes, list
Jan., 1894......75¢
Mallory, Wheeler Co., list Jan. 1,
1894......75¢
Norwich Lock Mfg. Co., list June
10, 1891......50¢2¢
Russell & Erwin Mfg. Co., list June
10, 1891......50¢2¢
Sargent & Co., list January 1, 1894
1894......75¢
William Wilcox Mfg. Co., list Janu-
ary 1, 1894......75¢20¢
Ames Sword Co. up to No. 108 inclu......50¢
Ames Sword Co. above No. 108......60¢10¢
Barnes Mfg. Co......40¢40¢10¢
Champion Padlocks......40¢
A. E. Deitz......40¢
Eagle......40¢2¢
Eureka, Eagle Lock Co......40¢
E. T. Fraim's Keystone Scandinavian.
1010 line......90¢50¢
120 line......90¢25¢
109 line......85¢
510 line......70¢10¢
225, 610 and 209 lines......50¢5¢
All other numbers......50¢5¢
Horsehoes. * doz \$9.50 50¢10¢
Hotchkiss......30¢
No. 1......30¢
Romer's Nos. 0 to 91......30¢
Romer's Scandinavian, & Co., Nos. 100 to
505......15¢
Scandinavian......90¢50¢
Slamaker, Barry & Co.
No. 1010 line......90¢
No. 41 line......50¢
No. 61 line......60¢
No. 21 line......70¢
No. 109 line......90¢40¢
Star......30¢
Yale Lock Mfg. Co.'s......net prices

Sash, &c.—

Attwell Mfg. Co......25¢33¢4¢
Champion Safety list January, 1893, 70¢5¢
Clark's No. 1, 10; No. 2, 3¢ gr......33¢4¢
Common Sense, Jap'd, Cop'd and
Br'ed. * gr \$4.00
Common Sense, Nickel Plated. * gr \$10.00
Corbin's Daisy, list Feb. 15, 1888......70¢
David Bronze, Barnes Mfg. Co......70¢
Ferguson's......33¢4¢
Fish (Liesche's pat.), No. 100, gr......33¢
No. 105, gr......10¢
Giant, list Jan. 1892......70¢10¢
Hammond's Window Springs......40¢
Huginin's New Sash Locks......25¢5¢2¢
Huginin's Sash Balances......25¢5¢2¢
Ives' Patent......60¢10¢2¢60¢10¢10¢
Kempshall's Gravity......80¢
Kempshall's Model......60¢60¢10¢
Monarch......50¢
Payson's Perfect......60¢10¢2¢60¢10¢10¢
Reading......60¢10¢2¢60¢10¢10¢
Security......70¢
Universal......30¢
Victor......60¢10¢2¢
Walker's......10¢
Wolcott's......60¢10¢2¢

Lumber Tools—

See Tools, Lumber.

Lustro—

Four-ounce bottles.....* doz. \$1.75; *
 gross.....\$17.00

Machines.

Boring—

Without
Augers, Upright, Angular.
Boss, Carpenters' 3.60
Boss, Ship Bldrs' 3.85
Douglas......\$5.50 \$6.75.....50¢
Jennings......5.50 6.75.....50¢50¢50¢
Millers Falls......7.50.....35¢
Phillips' Patent
with Auger 7.00 7.50......40¢10¢10¢
Snell's, Rice's Pat 5.50 6.75......40¢10¢10¢

Fluting—

American, 5 in., \$3.00; 6 in., \$3.40; 7 in.,
\$4.50 each......35¢
Combined Fluter and Sad Iron.
*** doz \$15.00.**.....30¢
Crown, 4 1/2 in., \$3.50; 6 in., \$4.00; 8 in.,
\$6.50 each......35¢
Crown Hand Fluter, Nos. 1, \$15.00; 2,
\$12.50; 3, \$10.00; 4, \$8.25......30¢
Crown Jewel, 6 in......\$5.50 each 35¢
Domestic Fluter......each, \$1.50
Eagle, 3 1/2-inch Rolls, \$2.15......35¢
Eagle, 4 1/2-inch Rolls, \$2.85......35¢
Knox, 4 1/2-inch Rolls......\$3.25 each 35¢
Knox, 6-inch Rolls......\$3.60 each 35¢

Holting—

Moore's Anti-Friction Differential Pul-
ley Block......20¢
Moore's Hand Hoist, with Lock Brake......20¢
Moore's Rope Differential Pulley
Block......60¢
Maris & Beekley (Teal Patent)......30¢
 See also Blocks.

Washing—

Fair and Square......* doz \$42.00
Anthony Wayne, * doz, No. 1, \$42; No.
2, \$30; No. 3, \$42.
Wayne American......* doz \$36.00
Wells......* doz \$64.00
Western Star * doz, No. 2, \$36; No. 3
\$39

Mallets—

B. & L. Block Co., Hickory & L. V.
80¢10¢40¢
Vibre Head, Stearns......33¢4¢
Hickory......20¢10¢20¢10¢10¢
Lignumvite......20¢10¢20¢10¢10¢

Mattocks—Regular list.

60¢10¢60¢10¢5¢

Measures—

Standard Fibreware, No. 1, pack *
dozen, \$3.50; 1/2-pack, \$3.00

Meat Cutters—

See Cutters, Meat.

Menders—

Harness.....\$ doz. \$1.75
Hudson's Hose Menders, in set, * doz.,
\$6.00

Hudson's Hose Bands......* gr. \$1.25

Milk Cans—See Cans, Milk.

Mills—

Box and Side, list Jan. 1, 1888, 60¢10¢
Net prices are often made which are
lower than above discount.
American, Enterprise Mfg. Co., list Jan.
17, 1893......20¢
National list, Jan. 1, 1894......30¢
Swift, Lane Bros......30¢
Wadell's New Box Mills, Ideal
Brand, New List......60¢60¢10¢

Mincing Knives—

See Knives, Mincing.

Molasses Gates—

See Gates, Molasses.

Money Drawers—

See Drawers, Money.

Mowers, Lawn—

Highest 10 in. 12 in. 14 in.
grade, \$4.00 5.25 \$4.50 6.00 \$5.00 6.75
Good \$3.00 \$3.25 \$3.50
Cheap. 2.25 2.50 2.75

Muzzles—

Safety......* doz. \$3.00, 25¢

Nails—

Cut and Wire. See Trade Report.
Wire Nails, Papered.
Association list, May 1, '92......35¢10¢

Hungarian, Finishing, Upholsterers', &c.
See Tacks.

Horse—

Nos. 6 7 8 9 10
A. C......25¢ 23¢ 22¢ 21¢ 21¢

American......9¢ 9¢ 9¢ 9¢ 9¢
Anchor......23¢ 21¢ 20¢ 19¢ 18¢
Ausable......23¢ 21¢ 20¢ 19¢ 18¢

Capwell......19¢ 18¢ 17¢ 16¢ 15¢
C. B. K......25¢ 23¢ 22¢ 21¢ 21¢

Champion......25¢ 23¢ 22¢ 21¢ 21¢

Champlain......28¢ 26¢ 25¢ 24¢ 23¢

Clinton, Fin......19¢ 17¢ 16¢ 15¢ 14¢
Empire Branded......11¢11¢
Essex......23¢ 21¢ 20¢ 19¢ 18¢

Lyra......9¢ 9¢ 9¢ 9¢ 9¢
Maud S......25¢ 23¢ 22¢ 21¢ 21¢

Northwest'n......25¢ 23¢ 22¢ 21¢ 21¢

Putnam......23¢ 21¢ 20¢ 19¢ 18¢
Snowden......9¢ 9¢ 9¢ 9¢ 9¢
Standard......23¢ 21¢ 20¢ 19¢ 18¢
Vulcan......23¢ 21¢ 20¢ 19¢ 18¢
Western......23¢ 21¢ 20¢ 19¢ 18¢

Picture—

Brass Head, Combination list......50¢10¢
Brass Head, Sargent's list......40¢10¢
Porcelain Head, Combination list......40¢10¢
Porcelain Head, Sargent's list......50¢10¢10¢
Niles' Patent......40¢

Nail Pullers—See Pullers, Nad.

Nail Sets—See Sets, Nad.

Nippers—See Pliers and Nippers

Nut Crackers—

See Crackers, Nut.

Nuts—List Dec. 18, 1889.

Square, Hex.
Cold Punched......5.00¢ 5.10¢ off list
Hot Pressed......5.80¢ 6.50¢ off list
In packages of 100 lb, add 1-10¢ lb
net; in packages less than 100 lb, add
1/2¢ lb, net.

Oakum—

Best or Government......* doz \$1.75 60¢
Navy......* doz \$1.75 60¢
U. S. Navy......* doz \$1.75 60¢

Oil Tanks—See Tanks, Oil.

Oilers—

Brass and Copper......50¢10¢50¢10¢5¢
Brass and Tin......70¢70¢10¢
Broughton's Brass......50¢
Broughton's Zinc......60¢
Malleable, Hammers' Improved, No. 1,
\$3.60; No. 2, \$4.00; No. 3, \$4.40 * doz.
Malleable, Hammers' Old Pattern, same
list......50¢
Olmstead's Brass and Copper......50¢
Olmstead's Tin and Zinc......60¢
Prior's Pat. or "Paragon" Brass......60¢
Prior's Pat. or "Paragon" Zinc......70¢
Steel, Draper & Williams......50¢
Wilmot & Hobbs Mfg. Co., Steel Anti-
Rust......60¢

Openers, Can—

American......* gross \$1.75 60¢
Champion......* doz \$2.00.....50¢
Domestic......* doz \$2.00.....45¢
Duplex......* doz \$2.50 15¢20¢
Eureka......* doz \$2.50 10¢
Excelsior, No. 1 \$2.50; No. 2, \$1.50......40¢
French, No. 4......* doz \$2.25 55¢60¢
Iron Handle, No. 5......* gr \$3.00 45¢50¢
Lyman's......* doz \$3.75 20¢
Messenger's Comet......* doz \$3.00 25¢
Moore's......70¢
Sardine Sclators......* doz \$2.75 30¢
Sprague, No. 1, 55¢; 2, 60¢; 3, 65¢;
Star......* doz \$2.75

Packing, Steam—

Rubber—

Standard, fair quality......70¢10¢75¢
Inferior quality......75¢10¢80¢
Extra......80¢50¢10¢25¢
Jenkins' Standard......* doz \$2.50 25¢
N. Y. B. & P. Co., Double Diamond......60¢
N. Y. B. & P. Co., Salamander......45¢
N. Y. B. & P. Co., Carbon......70¢5¢

Miscellaneous—

American Packing......9¢10¢ * doz
Corbin Packing......14¢15¢ * doz
Italian Packing......12¢13¢ * doz
Jute......6¢7¢ * doz
Russia Packing......13¢14¢ * doz

Palls—

S. S. & Co., 18 qt., \$7.00; 30 qt., \$7.95
*** doz.**.....5¢

Galvanized Palls—

Light......Heavy.
10 Quart......\$2.00 \$2.25.....\$2.25 \$2.50
12 Quart......2.25 2.50.....2.50 2.75
14 Quart......2.50 2.75.....2.75 3.00

Galvanized Buckets—

Fire......Well.
10 Quart......\$2.50 \$2.75.....\$2.25 \$2.50
12 Quart......2.75 3.00.....3.00 3.25
14 Quart......3.00 3.25.....2.50 2.75

Indurated Fiber Ware

Fire Pails, deep......* doz \$4.80
Fire Pails, round bottom......* doz \$5.40
Milk, 14 qt......* doz \$5.40
Stable, 14 qt......* doz \$6.00
Star Pails, 12 qt......* doz \$4.20

Standard Fiber Ware—

Buggy Pails......Plain. Decor'd
Chamber Pails, 14 qt......\$3.00 \$7.00
Dairy Pails, 14 qt......3.75 4.25
Fire Pails, No. 1, 12 qt......* doz 3.75
Fire Pails, No. 2, 14 qt......* doz 4.25
Horse Pails......4.00
Slop Jars (bal. trap)......7.50 8.50
Sugar Pails......5.00 5.50
Water Pails, 12 qt......3.15 3.75

Pans—

Large sizes......* doz 5¢
Small sizes......* doz 5¢
Silver & Co. (Covered)......40¢

Dripping—

Standard List:
No. 1......1 2 3 4
No. 2......\$3.00 \$3.75 \$4.25 4.75 \$5.25
No. 3......7 8
No. 4......\$6.00 \$7.00 \$8.00 \$9.00 \$10.00
Polished, regular goods......75¢75¢10¢
Aome Fry Pans......60¢6¢

Dust—

Steel Edge, No. 1......* doz \$1.75

Roasting and Baking—

Columbian, S. S. & Co., Nos. 10, \$2; 20,
\$2.25; 30, \$2.50 each......60¢10¢

Paper and Cloth—

Sand and Emery—
List April 19, 1888......50¢10¢60¢
Sibley's Emery and Crocus Cloth......30¢

Parers—

Apple—

Advance......* doz \$4.25
Baldwin......* doz 4.75
Bonanza......each 5.00
Dand......* doz 3.50
Eclipse......* doz 4.00
Eureka, 1888......each 16.00
Family Bay State......* doz 12.00
Favorite......* doz 5.00
Gold Medal......* doz 4.00
Imperial......* doz 4.00
Little Star Bay State......* doz 27.00 30.00
Monarch......* doz 13.50
New Lightning......* doz 5.50
Oriole......* doz 4.00
Penn......* doz 3.00
Perfection......* doz 4.00
Reading 78......* doz 7.75
Reading Table......* doz 6.50
Turn Table......* doz 4.50
Victor......* doz 13.50
Waverly......* doz 4.00
White Mountain......* doz 4.00

Potato—

Antrim Combination......* doz \$5.50
Saratoga......* doz \$5.50
White Mountain......* doz \$4.50

Pencils, Soapstone—

See Crayons.

Pickers, Fruit—

Prize Fruit Pickers......50¢

Picks—

Railroad or Adze Eye, 5 to 6, \$12.00; 6
to 7, \$13.00......60¢10¢10¢70¢

Picture Nails—

See Nails, Picture.

Pinking Irons—

See Irons, Pinking.

Pins—

Humason, Beckley & Co.'s......60¢10¢
Peck, Stow & W. Co......50¢10¢50¢10¢25¢
Sargent & Co.'s, \$17 and \$18......60¢10¢
Escutcheon—
Iron, list Nov. 11, 1885......70¢
Pipe, Wrought Iron
List April 13, 1893.
1 1/2 and under, Plain......57¢10¢10¢10¢
1 1/2 and under, Galv......50¢10¢10¢10¢
1 1/2 and over, Plain......87¢10¢10¢10¢
1 1/2 and over, Galv......57¢10¢10¢10¢
Boiler Tubes, list Oct. 24, 1892.
**65¢10¢10¢10¢
 Casing, list Nov. 16, 1892, 52¢10¢10¢10¢
 Cold Drawn Seamless Steel Tubing. 50¢
 Inserted Joints Casing, list Nov. 16,
 1892. 47¢10¢10¢10¢
 Steel Boiler Tubes. 27¢10¢10¢10¢**

Planes and Plane Irons—

Wood Planes—

Molding......50¢10¢
Bench, First quality......55¢10¢
Bench, Second quality......60¢10¢10¢
Bailey's (Stanley & L. Co.)......50¢10¢

Iron Planes

Bailey's (Stanley & L. Co.)......50¢10¢
**Birmingham Plane Co. 60¢10¢60¢10¢10¢
 Chaplin's Iron Planes. 50¢10¢50¢10¢25¢
 Davis' Iron Planes. 50¢50¢25¢
 Gage Tool Co.'s Self-Setting. 35¢
 Miscellaneous Planes (Stanley & L. Co.) 25¢10¢
 Sargent's. 50¢10¢10¢
 Standard Tool Co. 50¢10¢10¢10¢10¢
 Steers' Iron Planes. 50¢10¢50¢10¢5¢**

Plane Irons

Auburn Thistle......30¢10¢30¢10¢10¢
Buck Bros......30¢
Rutcher's......\$5.00 \$5.50 to 10,
Ohio......30¢10¢30¢10¢10¢
Stanley & L. Co......60¢10¢
L. & J. White......25¢

Plates—

Felloe......* doz 6¢6¢4¢

Pullers Nail-
 Helpee. \$ dos. \$24.00, 40%
 Economy. \$ dos. \$5.50, 10%
 Giant, No. 1. \$ dos. \$18.00, 10%
 Giant, No. 2. \$ dos. \$15.00, 10%
 Felican. \$ dos. \$9.00, 25%
 Scranton. \$ dos. \$18.00, 35%
 \$24.00, 40%

Pulleys-
 Brass Screw. 70%
 Hay Fork, "Anti-Friction," 5 in. solid. 50%
 Hay Fork, "F" Common and Patent. 20%
 Hay Fork, Moore's Anti-Friction 5 in. 40%
 Hay Fork, Tarbox Pat Iron. 40%
 Hay Fork, Reed's Self-Lubricating. 60%
 Hay Fork, Solid Eye, 4.00; Swivel. 40%
 Hay Fork, Stearns' Nos. 35 & 45. 50%
 Hay Fork, Stearns' Nos. 15, 25, 35, 65, 80. 50%
 Hay Fork, Tarbox Pat Iron. 40%
 Hot House, Awning. 70%
 Japanned Clothes Line. 60%
 Japanned Screw. 70%
 Japanned Slide. 70%
 Moore's Gelling or End, Anti-Friction. 40%
 Moore's Dumb Waiter, Anti-Friction. 50%
 Moore's Electric Light. 35%
 Moore's Slide, Anti-Friction. 60%
 Sash (Auger Mortise). 60%
 Common Sense. 60%
 Empire. 60%
 Ideal, Nos. 2, 4, 10 & 15. 60%
 Ideal, or IX No. 1. 60%
 On bbl. lots extra 5%. 22%
 Shade Rack. 45%
 Sheppard's Niagara, No. 25. 23%
 Tackle Blocks-See Blocks.

Pumps-
 Clifton, Best Makers. 60%
 Pitcher Spout, Best Makers. 70%
 Pitcher Spout, Cheaper G'ds. 75%
 Myers' Pumps, low list. 60%

Punches-
 Avery's Revolving. 40%
 Avery's Sawset and Punch-See Sawsets.
 Bemis & Call Co.'s Cast Steel Drive. 50%
 Bemis & Call Co.'s Cast Steel. 50%
 Bemis & Call Co.'s Spring. 50%
 Bemis & Call Co.'s Springfield Socket. 50%
 Niagara Hollow Punches. 20%
 Niagara Solid Punches. 55%
 Rice Hand Punches. 15%
 Saddler's or Drive, good. 60%
 Spring, good quality. 65%
 Spring, Leach's. 15%
 Solid Tinner's, P., S. & W. Co., \$ dos. 55%
 Tinner's Hollow Punches, P., S. & W. Co. 20%

Rail-
 Barn Door, Light. In. 1.75
 Per 100 feet. 2.10
 B.D. for N. E. Hangers. 2.75
 Small. Med. Large.
 Per 100 feet. 2.50
 Carrier, double braced, Steel Rail, 100 ft. 3.25
 Lundy Park Co. Plated Edge. 45%
 Moody Steel Rail, 5 ft. 5 in. 45%
 Moore's Steel Rail. 35%
 Sliding Door, Bronzed Wrt Iron, 5 ft. 6 in. 60%
 Sliding Door, Iron, Painted. 60%
 Sliding Door, Wrt Brass, 5 ft. 6 in. 40%
 Terry's Steel Rail, 7 ft. 4 in. 45%
 Victor Track Rail, 7 ft. 4 in. 50%

Rakes-
 Cast Steel, Association G'ds. 70%
 Cast Steel, outside G'ds. 70%
 Malleable, good. 70%
 Malleable, low grade. 75%
 Fort Madison Prize Bow Brace and Peerless. 65%
 Fort Madison Steel Tooth Lawn Rake. 80%
 Gibbs' Aome Lawn Rake. \$ dos. \$4.90
 Gibbs' Canton Lawn Rake. \$ dos. \$4.75
 Gibbs' Crown Lawn Rake, No. 1. \$ dos. \$4.90
 Gibbs' Favorite Lawn Rake. \$ dos. \$4.95
 Gibbs' Hustler No. 0. \$ dos. \$4.25
 Gibbs' Hustler No. 1. \$ dos. \$4.40
 Oneida Lawn Rake. \$ dos. \$6.00

Razors-
 Campbell Cutlery Co. 50%
 Electric Cutlery Co. Net prices
 Galvanic. \$ dos. \$15.00
 Jordan's A.M. new list. Net prices
 Jordan's Old Faithful, new list. Net prices
 J. R. Torrey Razor Co. Net prices
 Wostenholm and Butcher, \$10 to 2. 10%

Razor Straps-
 See Straps, Razor.

Reels-
 Clothes Line- 33%
 Stearns'. 10%

Fishing-
 Hendryx Aluminum, German Silver, Gold, Bronze, Silver Rubber, Popolo and Salmon, Multiplying and Quadruple, all sizes. 25%
 Hendryx Single Action Series, 102P and PN, 202P and PN, 102PR and PRN, 202PR and PRN, 504P and PN, 00304P and PN, 502 and 502N, 802 and 82N, 02084N, Competitor. 50%
 Hendryx Multiplying and Quadruple Series, 800N and PN, 4N and PN, 2904N, 2904P and PN, 02904PN, 0924 and 0924N, 5000N and PN. 40%

Registers-
 Moore's Bronze Finishes. 70%
 Moore's Electroplated. 75%
 Moore's Japanned. 75%
 Moore's Solid Bronze. 85%
 Moore's Stove Pipe. 85%

Rings and Rings-
 Bull Rings- 50%

Hog Rings and Rings-
 Hotchkiss' low list. 30%
 Humason, Beckley & Co.'s. 70%
 Peck, Stow & W. Co.'s. 50%
 Sargent's. 75%
 Union Nut Co. 55%
 Note.-The market on Hog Rings and Rings is in a depressed condition and prices are low and irregular. We therefore withdraw quotations for the present.

Rivets and Burrs-
 Copper. 60%
 Coppered Iron, Betina Brand. 60%
 Iron Norway, List Nov. 17 '87. 60%
 Second Quality. 70%

Rivet Sets-See Sets.
Roasting and Baking Pans-See Pans, Roasting and Baking.

Rods-
 Stair, Black Walnut. \$ dos 40%
 Stair, Brass. 25%

Rollers-
 Acme Moore's Anti-Friction. 55%
 Barn Door, Sargent's list. 60%
 Moore's Barn Door Stay. 60%
 Union Barn Door Roller. 70%
 Thompson Mfg. Co.'s Lawn Rollers. 80%

Rope-
 The following prices are f.o.b. New York or factory, and are shaded 1/4% on large lots; terms, 1 1/2% for cash.
 Manila, 7-16 in. diam. and larger. 7 1/4%
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Snaps, Harness, &c.
Anchor (P. & S. Mfg. Co.) 50¢
Andrews 50¢
Cover's Saddlery Works' Triumph 38¢
Covered Spring 80¢
Cover 50¢
Cover, New Patent 50¢
Cover, New E. E. 50¢
Fitch's (Bristol) 40¢
German, new list 40¢
Hotchkiss 10¢
Kelley & Woolworth's Steel Harness 50¢
John Protz Snaps 70¢
Sargent's Patent Guarded 70¢

Snaths
Boytche 50¢

Soldering Irons
See *Iron, Soldering*.

Spittoons, Cuspidors, &c.
Standard Fiberware
Cuspidors, 3 1/2 inch, doz., No. 5, \$3; No. 5X, \$9
Spittoons, Daisy, 3 inch, No. 1, 10 and 11 inch, \$8.

Spoke Shavers
See *Shavers, Spoke*.

Spoke Trimmers
See *Trimmers, Spoke*.

Spoons and Forks
Tinned Iron

Basting, Cen. Stamp. Co.'s list 70¢
Buffalo, S. S. & Co. 35¢
Solid Table and Tea, Cen. Stamp. Co.'s list 70¢

Silver Plated
4 months or 5% cash 30 days

L. Boardman & Son 50¢
Holmes & Edwards Silver Co. 40¢
Meriden Brit. Co., Rogers 40¢
Reed & Barton 40¢
Rogers & Bros. 40¢
C. Rogers & Bros. 40¢
Rogers & Hamilton 40¢
Wm. Rogers Mfg. Co. 40¢
Simpson, Hall, Miller & Co. 40¢

Miscellaneous
Boardman's Britannia Spoons, cash lots 60¢
Boardman's Nickel Silver, list July 1, 1891 60¢
Britannia 60¢
German Silver 60¢
Nickel Silver 60¢
Holmes & Edwards Silver Co. 60¢
No. 24 German Silver 60¢
No. 30 Silver Metal 60¢
No. 49 Nickel Silver 60¢
No. 50 Nickel Silver 60¢
No. 57 Mexican Silver 60¢

Rogers & Hamilton
Cimeter, Flatware 40¢
Cimeter, Steel Goods 40¢
Crown Hamilton, Flatware and Cutlery 30¢
Steel Goods 40¢
Wm. Rogers Mfg. Co. 60¢
18¢ Rogers' German Silver 60¢
22¢ Rogers' Nickel Silver 60¢
Rogers' Silver Metal 60¢

Springs, Door
Champion (Coll.) 60¢
Cowell's, No. 1, doz. \$18.00; No. 2, \$15.00
Gem (Coll.), list April 19, 1888 20¢
Hercules 50¢
Phoenix 35¢
Rubber, complete, doz. \$4.50 55¢
Star (Coll.), list April 19, 1888 40¢
Torrey's Rod, 39 in. doz. \$12.00 125¢
Warner's No. 1, doz. \$15.00; No. 2, \$8.40 55¢
Victor (Coll.) 60¢

Carriage, Wagon, &c.
Billipte, Concord, Platform and Half Scroll 60¢
Olin's Roller Springs 25¢

Sprinklers, Lawn
Gibbs Arc doz., \$12.00
Gibbs' Rustler doz., \$5.00

Squares
Nickel Plated 80¢
Steel and Iron 80¢
Try Square and T Bevels 10¢
Avery's Bevel Protractor 50¢
Avery's Flush Bevel Squares 40¢
Dartton's Try Square and T Bevels 50¢
Starratt's Micrometer Calliper Squares 25¢
Winterbottom's Try and Miter 30¢

Squeezers
Fodder
Blair's doz. \$2.00
Blair's "Olimax" doz. \$1.00

Lemon
Porcelain Lined, No. 1 doz. \$6.00
Wood, Common doz. \$1.70
Wood, No. 2 doz. \$1.70
Dean's, No. 1, doz. \$3.50; No. 2, \$3.00
Dunlap's Improved doz. \$5.75
Hotchkiss Straight Flash doz. \$12.00
Jennings' Star doz. \$2.50
King 40¢
Little Giant 50¢
Sammls No. 1, \$5.00; No. 2, \$9.12
The Boss doz. \$2.50

Standard Fiber Ware
See *Ware, Standard Fiber*.

Staples
Barbed Blind, 1/2 in. and larger, doz. 7¢
Barbed Blind, 1/2 in. doz. 8¢
Fence Staples, Galvanized, as per Wire
Fence Staples, Plain, as per Wire
Grand Crossing Tack Co.'s list 75¢

Steel Butchers'
C. & A. Hoffmann's 40¢
Nichols Bros. 50¢

Steelyards
40¢

Stocks and Dies
Blacksmith's
Butterfield's Goods 35¢
Waterford Goods 35¢
Gardner 25¢
Green River 25¢
Lightning Screw Plate 25¢
Reece's New Screw Plates 25¢
Reversible Ratchet 80¢

Stone
Stones, Grind—See *Grindstones*.

Scythe Stones
Pike Mfg. Co., list April, 1892 35¢
Cleveland Stone Co., list Nov. 1892 35¢

Oil Stones, &c.

Pike Mfg. Co.
Hindustan No. 1, doz. \$8
Sand Stone 40¢
Turkey Oil Stone, 4 to 8 10¢
In 50¢
Turkey Slips 60¢
Lily White Slips 60¢
Rosy Red Washita 60¢
Washita Stone, Extra 60¢
Washita Stone, No. 1 40¢
Washita Stone, No. 2 30¢
Lily White Slips 60¢
Rosy Red Slips 60¢
Washita Slips, Extra 60¢
Washita Slips, No. 1 70¢
Arkansas Stone, No. 1, 3 to 5, in \$2.50
Arkansas Stone, No. 15, 2 to 3 in \$3.50
Lake Superior 13¢
Lake Superior Slips 20¢
Tanite Mills
Smery Oil doz., \$9.00; 50¢

Stops, Bench
Cincinnati 25¢
Crescent doz. \$1.50
Hotchkiss doz. \$5.10
McGills doz. \$3
Millers Falls 25¢
Morrill's, doz. No. 1, \$10.00; No. 2, \$11.00
Stearns 40¢
Terrell's Nos. 1 and 2, doz. \$5; No. 3, \$3.50
Weston's, No. 1, \$10; No. 2, \$9.25

Stove Polish
See *Polish, Stove*.

Stretchers Carpet
Cast Iron, Steel Polaris doz. 75¢
Cast Steel, Polished doz. 25¢
Society doz. 17¢
Bullard's 35¢

Strops
Badger's Belt and Com. doz. \$2.00
Campbell Cutlery Co. Net prices
Electric Cutlery Co. Net prices
Genuine Emerson 60¢
Imitation doz. \$2.00
Jordan's Pat. Padded, list Nov. 1, '89, 50¢
Lamont Combination Net prices
Treacy's 40¢

Stuffer Sausage
Miles Challenge, doz. \$20 50¢
Perry doz. No. 1, \$15.00; No. 2, \$21.00
Draw Cut No. 4, each \$30.00 30¢
Enterprise Mfg. Co., list Jan. 17, '93, 25¢
Silver's 40¢

Sweepers, Carpet and Lawn Carpet
Acme doz. \$28.00
Advance doz. \$18.00
Banner Jap'd, doz. \$22.00; Nickel, \$24.00
Gold Medal doz. \$27.00
Prize doz. \$27.00
Superior doz. \$27.00
Cosmopolitan doz. \$27.00
Furniture Protector, Nickel doz. \$24.00
Furniture Protector, Nickel doz. \$24.00
Inter Ocean doz. \$27.00
Hall doz. \$48.00
Crown Jewel, No. 1, \$18.00; No. 2, \$19.00; No. 3, \$20.00
Domestic, No. 2 doz. \$22.00
Easy Jap'd, doz. \$22.00; Nickel, \$24.00
Excelsior doz. \$22.00
Garland doz. \$18.00
Gilt Edge doz. \$24.00
Grand Rapids doz. \$24.00
Grand Republic doz. \$24.00
Housewife's Delight doz. \$15.00
Imperial doz. \$28.00
Improved Parlor Queen, Japanned doz. \$24.00
Nickel doz. \$27.00
Ladies' Friend No. 2 doz. \$15.00
Model doz. \$27.00
Parlor Queen doz. \$24.00
Our Leader doz. \$19.00
Our Own doz. \$27.00
Rapid Jap'd, doz. \$22.00; Nickel, \$24.00
Reliable doz. \$22.00
Select doz. \$24.00
Standard doz. \$24.00
Supreme doz. \$22.00
The Star doz. \$21.00
Triumph doz. \$20.00
Bissell Carpet Sweeper Co. make the following rebates:
\$1.00 per doz. in 5 doz. lots.
\$2.00 per doz. in 10 doz. lots.

Lawn
Thompson Mfg. Co. 30¢

Swings
Davies Lawn 25¢

Tacks, Brads &c.
list October 19, 1889. Old established straight weights. Short weight goods are sold at lower prices.

Carpet Tacks
American, Blued 47¢
American, Tin'd and Cop'd 52¢
Steel, Bright and Blued 47¢
Steel, Tinned and Cop'd 52¢
Swedes Iron, S. S., Blued 40¢
Swedes Iron, S. S., Tinned 47¢
American Iron Tacks, Domestic 37¢
Swedes Iron Tacks, Foreign 50¢

Swedes Iron Tacks
S. S., Blued 37¢
S. S., Tinned 40¢
Lanc. Blued 30¢
Lanc. Tinned 37¢
Upholsterers' S. S. 47¢
Upholsterers' Lanc. 37¢
Gimp Tacks 30¢
S. S., Blued 42¢
Lanc. Blued 20¢
Lanc. Tinned 20¢
Basket and Trimmers' Tacks 35¢
Lanc. 30¢
S. S. 30¢
Hungarian Nails 35¢
Common and Patent Brads 35¢
Leathered Tacks 5¢
Brush Tacks and Nails, S. S. 5¢
Looking Glass Tacks, S. S. 12¢
Lace Tacks, Blued 12¢
Lace Tacks, Tinned 20¢
Finishing Nails 52¢
Trunk and Clout Nails 52¢
Black 52¢
Tin'd or Cop'd 52¢
Basket Nails 37¢
Chair Nails 35¢
Chair Box Nails 30¢
Tin Capped Nails 50¢

Miscellaneous
Double Point 60¢
Wire Carpet Nails 60¢
Bill Nye Brad Box 40¢
Bonnie Blue box \$1.50
Claw Handle Carpet gross \$4.00
Home Tacks, No. 50, case (12 cartons), \$95.00; No. 100, case (12 cartons), \$72.00
Home Nails, No. 200, case (12 cartons), \$30.00; No. 400, case (12 cartons), \$30.00
Parisian Gilt Nails, cartoon 50¢
Plymouth Rock Carpet Tacks 20¢
Upholsterers' Nails 50¢

Wire Brads and Nails
Steel-Wire Brads, R. & E. Mfg. Co.'s list 50¢

See also *Nails, Wire*.

Tanks Oil
Emerald, S. S. & Co.: 30-gal. \$3.75; 60-gal. \$11 each 50¢

Tapes, Measuring
American 40¢
Chesterman's, Regular list 25¢
Excelstor, Special list 20¢
Spring 40¢

Thermometers
Tin Case 80¢

Thimble Skins—See *Skirts*

Ties Bale—Steel
Standard Wire, list 50¢

Tinners' Shears, &c.
See *Shears, Tinners' &c.*

Tinware
Stamped, Japanned and Placed, list Jan. 20, 1887 70¢

Tire Benders, Upsetters, &c.
See *Benders and Upsetters, Tire*.

Tobacco Cutters
See *Cutters, Tobacco*.

Tools
Coopers' 25¢
Barton's 20¢
Beatty's 35¢
Bradley's 30¢
Sandusky Tool Co. 30¢
Shaves Cincinnati Tool Co. 20¢
L. & J. White 20¢

Lumber
Cant Hooks, "Blue Line" doz. \$16.00
Cant Hooks, Common Finish, doz. \$14.00
Cant Hooks, Mail, Socket Clasp, "Blue Line" Finish \$16.00
Cant Hooks, Mail, Socket Clasp, Common Finish doz. \$14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish doz. \$14.00
Cant Hooks, Clip Clasp, Common Finish doz. \$12.00
Hand Spikes doz. 6 ft., \$15.00; 8 ft., \$20.00

Pike Poles, Pike and Hook
12 ft., \$12.50; 16 ft., \$14.50; 18 ft., \$17.50; 20 ft., \$21.50
Pike Poles, Pike only, doz. 12 ft., \$10.00; 14 ft., \$11.00; 16 ft., \$13.00; 18 ft., \$16.00; 20 ft., \$20.00
Pike Poles, not ironed, doz. 12 ft., \$9.00; 14 ft., \$9.00; 16 ft., \$9.00; 18 ft., \$12.00; 20 ft., \$16.00
Mail Iron Socket Peavies doz. \$19.00
Ring Peavies, "Blue Line" doz. \$20.00
Ring Peavies, Common doz. \$18.00
Steel Socket Peavies doz. \$21.00
Setting Poles, doz. 12 ft., \$14.00; 14 ft., \$15.00; 16 ft., \$17.00
Swamp Hooks doz. \$18.00

Atkins' new list 40¢
Simonds' 35¢

Transom Lifters
See *Lifters, Transom*.

Traps—Game
Blake's Patent 40¢
Newhouse 40¢
Oneda Pattern 75¢
Sensible 35¢

Mouse and Rat
Cyclone gr \$5.25
Dandy doz., \$1.75
Hotchkiss Metallic Mouse, 5-hole traps, doz. 75¢; in full cases, doz. \$6.00
Hotchkiss Imp. Rat Killer gr \$15.50
Hotchkiss New Rat Killer gr \$15.50
Ideal gr \$10.00
Mouse, Bonanza doz. 0.90
Mouse, Cage, Wire doz. \$2.50
Mouse, Cat, wire, 5-hole traps, doz. \$2.50
Mouse, Wood, Choker, doz. \$10.00
Mouse, Round Wire doz. \$1.50
Mouse, Sensible 35¢
Kat, Decoy gr \$10.00
Rat, Sensible 35¢
Schuyler's Rat Killer gr \$15.00
Wadde's Go Bang, gr \$12.50

Ballon, Globe or Acme
Harper, Champion or Paragon doz. \$1.75; gr. \$10.50

Butter and Cheese 25¢

Trimmers, Spoke
Bones' doz. \$10.00, 50¢
Ivey's, No. 1, \$15.00; No. 2, \$12.00 50¢
Stearns' 55¢
Douglas' doz. \$9.00, 20¢
Cincinnati 25¢

Trowels
Brade's Brick 25¢
Clement & Maynard's 20¢
Dixton's Brk and Plastering 25¢
Lothrop's Brick and Plastering 20¢
Peace's Plastering 25¢
Reed's Brick and Plastering 15¢
Rose's Brick 25¢
Worrell's Brick and Plastering 20¢
Cleave's Angle Trowel, gr. No. 1, \$5.00; No. 2, \$3.00; No. 3, \$1.50, net 10¢
Garden 70¢

Trucks, Warehouse, &c.
B. & L. Block Co.'s list 40¢
Eames' Barrel Trucks 40¢
Daisy Stove Trucks, Improved pattern, doz. \$18.00
Thompson Mfg. Co. 40¢

Tubes, Boiler
See *Pipe*.

Twine
Flax Twine—BC—B
No. 9, 1/2 and 3/4 Balls 35¢
No. 12, 1/2 and 3/4 Balls 35¢
No. 15, 1/2 and 3/4 Balls 35¢
No. 20, 1/2 and 3/4 Balls 35¢
No. 30, 1/2 and 3/4 Balls 35¢
Chalk Line, Cotton, 1/2 B Balls 15¢
Cotton Mops, 6.9, 12.15 B to doz. 15¢
Cotton Wrapping, 5 Balls to B. 15¢
2-Ply Hemp, 1/2 and 3/4 B Balls (Spring Twine) 10¢
2-Ply Hemp, 1 B Balls 10¢
2-Ply Hemp, 1 1/2 B Balls 10¢
2-Ply Hemp, 1 1/2 B Balls 10¢
Mason Line, Linen, 1/2 B Balls 5¢
No. 264 Mattress, 1/2 and 3/4 B Balls, 52¢
Paper 10¢
Wool 5¢

Vises
Solid Box 50¢

Parallel
Backus and Union 40¢
Bonney's 40¢
Double Screw Leg 15¢
Hollander's 35¢
Howard's 40¢
Massey Quick Action 20¢
Merrill's 15¢
Millers' Falls 40¢
Moore's 20¢
Parker's 20¢
Pratt's 20¢
Sargent's 70¢
Simpson's Adjustable 40¢
Stephens' 25¢
Trenton 40¢
Wilson's 55¢

Saw Filers
Bonney's, Nos. 2 & 3, \$15.00 40¢
Economy, doz. Nos. 110, \$10.00; 120, \$15.00 10¢
Hopkins' doz. \$17.50, 10¢
Reading 40¢
Stearns' Common, Nos. 0, 1, 2 & 3 50¢
Stearns' Rubber Jaw, Nos. 10 & 18, 35¢
Wentworth 20¢

Miscellaneous
Bauer's Pipe Vises 10¢
Cincinnati 25¢
Covell Hand Vises 20¢
Enterprise Pipe Vises, each \$3.00, 40¢
Massey Combination Pipe Vise 40¢
Phoenix Vises 35¢
Phoenix Hand Vises, doz. \$3.00, 35¢

Wads—Price Per M.
U.M.C.W.R.A.—B. E. 11 up 65¢
U.M.C.W.R.A.—B. E. 9 & 10 82¢
U.M.C.W.R.A.—B. E. 8 95¢
U.M.C.W.R.A.—B. E. 7 1.10
U.M.C.W.R.A.—P. E. 11 up 1.15
U.M.C.W.R.A.—P. E. 10 & 11 1.60
U.M.C.W.R.A.—P. E. 8 1.70
U.M.C.W.R.A.—P. E. 7 1.80
Eley's B. E. 11 and larger \$1.70
Eley's P. E. 12 to 20 \$3.00

Wagon Boxes
See *Boxes, Wagon*.

Wagon Jacks
See *Jacks, Wagon*.

Ware, Hollow
Cast Iron, Hollow

Stove Hollow Ware
Ground 60¢
Unground 65¢
Gray Enamelled Ware 50¢
Maslin Kettles 60¢
Boilers and Saucepans 40¢
White Enamelled Ware 70¢
Maslin Kettles 70¢
Boilers and Saucepans 60¢
Rustless Hollow Ware 60¢
Tinned Boilers and Spans 60¢

Enamelled
Agate and Granite Ware, list Jan. 1, 1894 25¢
Ironclad Enamelled Ware, old list 50¢

Kettles
Galvanized Tea-Kettles—Inch. 3 7 8 9
Each 55¢ 60¢ 65¢ 75¢

Steel Hollow Ware
Avery Spiders and Griddles 60¢
Avery Kettles 60¢
Standard Fiber—Per Doz. Plain, Decorated, \$7.50

Cuspidors
Halt-pock Measure \$1.00
Peck Measure 3.50
Keelers, 1 1/2 in. 3.00
Spittoons, "Daisy" 8 in. 4.00
Wash-Basins, 10 in. 1.80
Wash-Basins, 12 in. 2.00

Indurated Fiber
Basins Ringed, doz. No. 2 2.80
Butter Bowls 15, 17 and 19-inch (3 pieces), nest \$1.60
Keelers Nested, Nos. 1, 2, 3 and 4 (4 pieces), nest \$2.55
Liquid Measures, pt., qt., 2 qt. and funnel (4 pieces), nest \$1.20
Spittoons, 2 1/2 doz. \$6.00
Washbasins, Nested, Nos. 0, 1, 2, and 3 (4 pieces), nest \$5.75

Silver Plated, Hollow
4 mo. or 5% cash in 30 days
Meriden Britannia Co. 40¢
Rogers & Hamilton 40¢
Simpson, Hall, Miller & Co. 40¢
Hartford Silver Plate Co. 40¢
William Rogers Mfg. Co. 40¢

Washers
Sise hole 5-16 3/4 1/2 3/4 1/2 1/4
Washers 5-16 3/4 1/2 3/4 1/2 1/4
In lots less than 3000, add 1/4, 5-16 boxes 14 to list.

Washer Cutters
See *Cutters, Washer*.

Water Coolers
See *Coolers, Water*.

Wedges
Iron 2 1/2 3/4 1/2 3/4 1/2 1/4
Steel 2 1/2 3/4 1/2 3/4 1/2 1/4

Weights Sash
Ton lots at foundry, \$15.00 to \$16.00

Well Buckets Galvanized
See *Falls, Galvanized*.

Wheels Well
5 in. \$2.00; 10 in. \$2.50; 12 in. \$2.75

Extra 33 1/3 % & 2 % cash.

Whips

American Whip Co.: Length.	4 1/2	5	5 1/2	6	6 1/2	7	7 1/2	8 ft
X. L. Whalebone Driving.....	\$13.00	\$0.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
Mureks, Two-thirds Whalebone.....	15.00	16.50	18.00	20.00	22.00	24.00	26.00	28.00
Bull Bone, Half-length Whale bone.....	11.00	12.00	13.00	15.00	16.00	18.00	20.00	22.00
American Standard.....	8.00	8.50	9.00	10.00	11.00	12.00	13.00	14.00
True Grip, Raw Hide Center.....	6.00	6.00	6.50	7.00	7.50	8.00	8.50	9.00
New Name, Stocked Java, Black and Wine Colors.....	6.00	6.00	6.50	7.00	7.50	8.00	8.50	9.00
Americus, 98 Pen Whip.....	6.00	6.00	6.50	7.00	7.50	8.00	8.50	9.00
Gents' Light Driving No. 111.....	6.00	6.00	6.50	7.00	7.50	8.00	8.50	9.00
Gents' Light Driving No. 106.....	6.00	6.00	6.50	7.00	7.50	8.00	8.50	9.00
Hand-made Stocked Java No. 108.....	8.75	4.00						
A large variety of cheaper grades.....								
Team Whips.....								
Toy Whips.....								
Hardware Assortment, 10/American, 75 Whips for \$50.00.....								

Wire and Wire Goods—

Iron—

Market,	Br. and Ann., Nos. 0 to 18.	Extra 50¢ 10¢
Br. and Ann., Nos. 0 to 18.	75¢ 10¢ 75¢ 10¢ 25¢	often given and low net
Cop'd, Nos. 0 to 18.	75¢ 10¢ 75¢ 10¢ 25¢	prices often made on large lots.
Galv., Nos. 0 to 18.	75¢ 10¢ 75¢ 10¢ 25¢	
Tin'd, Tin'd List, Nos. 0 to 18.	75¢ 10¢ 75¢ 10¢ 25¢	

Stone,	Br. and Ann'd,	Extra 10¢
Nos. 16 to 18.	80¢ 10¢	often given.
Nos. 19 to 26.	80¢ 10¢	
Nos. 27 to 36.	80¢ 10¢	
Annexed Wire on Spools.....	40¢ 25¢	
Cast Steel Wire.....	50¢	
Copper, list Jan. 18, 1884.....	40¢ 25¢	
Galvanized Fence.....	75¢ 10¢	
Malin's An'aled & Tin'd on Spools.....	80¢ 25¢	
Malin's Brass and Cop. on Spools.....	50¢ 25¢	

Steel Music Wire, 12 to 30, imported... 60¢ 70¢
 Stubs' Steel Wire..... \$6.00 to 2, 30¢
 Tate's Spooled, Tin'd & Annealed..... 60¢
 Tate's Spooled Cop. and Brass..... 50¢
 Tinned Broom Wire, 18 to 21, 1/2"..... 45¢
 Wire Clothes Line, see Lines.
 Wire Picture Cord, see Cord.

Bright Wire Goods—

Standard list..... 90¢ 90¢ 15¢
 Wire Cloth and Netting—
 Galvanized Wire Netting..... 80¢ 80¢ 10¢ 25¢
 Painted Screen Cloth 100 ft \$1.45 \$1.50

Wire Barb—

See Trade Report.

Wire Rope—See Ropes, Wire.

Wrenches—

American Adjustable.....	40¢
Baxter's Adjustable "g".....	40¢ 10¢ 50¢
Baxter's Diagonal.....	60¢
Coe's Genuine.....	50¢ 50¢ 10¢
Claird Standard.....	55¢ 10¢ 70¢
Lamson & Sessions' Engineers.....	60¢ 10¢
Lamson & Sessions' Standard.....	70¢ 10¢
Claird Agricultural.....	75¢ 10¢ 25¢
Lamson & Sessions' Agric'l.....	80¢ 25¢
P. S. & W. Agricultural.....	80¢ 25¢
W. & B. Diamond.....	50¢ 25¢
Acme, Nickle.....	40¢ 25¢

Aiken's Pocket (Bright)..... \$6.00, 50¢ 10¢
 Alligator..... 50¢
 Always Ready..... 25¢ 5¢
 Bennis & Cullis.....
 Adjustable S..... 35¢ 5¢
 Briggs' Pattern..... 30¢ 10¢
 Combination Black..... 40¢ 10¢
 Combination Bright..... 40¢ 10¢
 Cylinder or Gas Pipe..... 45¢ 5¢
 Extra Heavy..... 45¢
 Merrick's Pattern..... 45¢
 No. 3 Pipe Bright..... 55¢
 Bit Wrench, Adj., Tatum's..... \$ doz., \$2.25, 25¢ 10¢

Boardman's.....

Cincinnati Brace Wrenches..... 25¢ 10¢
 Diamond Steel..... 55¢ 25¢
 Donohue's Engineer..... 20¢ 10¢
 Hercules..... 70¢ 70¢ 10¢
 Tatta's Vise Wrench..... 55¢ 10¢ 25¢
 The Favorite Pocket..... \$ doz., \$4.00, 40¢
 Walker's..... 55¢ 25¢
 Webster's Pat. Combination..... 25¢

Wringers, Clothes

Am. Wringer Co.'s list July 1, '83..... 2% cash
 Colby Wringer Co., list May 1, '84..... 2% cash
 Lovell Mfg. Co., list July 1, 1892..... 2% cash
 Peerless Mfg. Co., list Feb., 1892..... 2% cash
 National Wringer & Mfg. Co., list June 1, 1892..... 2% cash

Wrought Goods—

Staples, Hooks, &c., list, March 17, 1892..... 85¢ 10¢ 85¢ 15¢

Paints, Oils and Colors.—Wholesale Prices.

Animal and Vegetable

Oils—

Linseed, City, raw.....	54	55
Linseed, City, boiled.....	57	58
Linseed, Western, raw.....	55	56
Lard, City, Extra Winter.....	53	54
Lard, City, Prime.....	53	54
Lard, City, Extra No. 1.....	53	54
Lard, City, No. 1.....	53	54
Lard, Western, prime.....	52	53
Cotton-seed, Crude, prime.....	29	30
Cotton-seed, Crude, off grades.....	28	29
Cotton-seed, Summer Yellow, prime.....	30	31
Cotton-seed, Summer Yellow, off grades.....	30	31
Sperm, Crude.....	60	61
Sperm, Natural Spring.....	60	61
Sperm, Bleached Spring.....	60	61
Sperm, Natural Winter.....	60	61
Sperm, Bleached Winter.....	60	61
Whale, Crude.....	40	41
Whale, Natural Winter.....	40	41
Whale, Bleached Winter.....	40	41
Whale, Extra Bleached.....	40	41
Sea Elephant, Bleached Winter.....	40	41
Menhaden, Crude, Sound.....	25	26
Menhaden, Crude, Southern.....	25	26
Menhaden, Light Pressed.....	30	31
Menhaden, Bleached Winter.....	35	36
Menhaden, Extra Bleached.....	37	38
Tallow, City, prime.....	43	44
Tallow, Western, prime.....	40	41
Cocoonut, Ceylon.....	54	55
Cocoonut, Cochinchina.....	74	75
Cod, Domestic.....	34	35
Cod, Foreign.....	36	37
Red Elaine.....	35	36
Red Saponified.....	44	45
Bank.....	29	30
Straits.....	29	30
Oliver, Italian, bbls.....	55	56
Neatsfoot, prime.....	60	61
Palm, prime, Lagos.....	54	55

Mineral Oils—

Black, 29 gravity, 25 @ 30 cold test.....	7	7 1/2
Black, 29 gravity, 15 cold test.....	7	7 1/2
Black, 29 gravity, summer.....	7	7 1/2

Paints and Colors—

Cylinder light, filtered..... 12 @ 16
 Cylinder, dark, filtered..... 10 @ 13
 Paraffine, 23 1/2 @ 24 gravity..... 11 @ 12
 Paraffine, 25 gravity..... 10 @ 11
 Paraffine, 28 gravity..... 7 1/2 @ 8
 Paraffine, red..... 7 1/2 @ 10 1/2

Paints and Colors—

Barytes, Foreign, 2 ton..... \$22.00 @ 24.00
 Barytes, Amer. floated..... \$22.00 @ 24.00
 Barytes, Amer. No. 1..... \$16.00 @ 18.00
 Barytes, Amer. No. 2..... \$13.00 @ 15.00
 Barytes, Amer. No. 3..... \$11.00 @ 12.00
 Blue, Celestial..... 1 @ 8
 Blue, Chinese..... 40 @ 50
 Blue, Prussian..... 25 @ 40
 Blue, Ultramarine..... 8 @ 25
 Brown, Spanish..... 1 1/2 @ 3 1/2
 Brown, Vandyke, English..... 8 @ 8
 Carmine, No. 40, in bulk..... 2.00 @
 Carmine, No. 40, in boxes or barrels..... 2.10 @
 Carmine, No. 40, in ounce bottles..... 3.00 @
 Chalk, in bulk..... 1.75 @ 2.00
 Chalk, in bbls. 100 lb..... 33 @ 40
 China Clay, English..... 1 @ 13.00 @ 18.00

Cobalt Oxide, prep'd.....

Cobalt Oxide, black..... 9.00 @ 11.00
 Cobalt Oxide, black, 100 lb..... 1.90 @
 Cobalt Oxide, black, 100 lb..... 1.90 @
 Cobalt Oxide, black, 100 lb..... 1.90 @

Green, Paris, in bulk.....

Green, Paris, 170 @ 175 lb..... 23 @
 Green, Paris, small pack..... 25 @ 29 1/2
 Rebates—3¢ @ 10 on lots of 10,000 lb or over; 2 1/2¢ @ 10 on 10,000 lb; 2¢ @ 2000 to 4000 lb; 1 1/2¢ @ 1000 to 2000 lb; 1¢ @ 500 to 1000 lb purchased during the season.

Green, Chrome, ordinary.....

Green, Chrome, ordinary..... 6 @ 12
 Green, Chrome, pure..... 22 @ 25
 Lead, Eng., B.B. white..... 7 @ 8
 Lead, Ann. White..... 4 1/2 @ 4 1/2
 In Oil..... 5 1/2 @ 6 1/2
 Lead, White, in oil, 25 lb tin pails, add to keg price..... 1 @ 1/2
 Lead, White, in oil, 12 1/2 lb tin pails, add to keg price..... 1 @ 1/2
 Lead, White, in oil, 1 to 5 lb assorted tins, add to keg price..... 2 1/2 @

Lead, Red, bbls. and 1/4 bbls.....

Lead, Red, bbls. and 1/4 bbls..... 5 1/2 @ 5 1/2
 Lead, Red, bbls. and 1/4 bbls..... 5 1/2 @ 5 1/2
 Litharge, kegs..... 5 1/2 @ 5 1/2
 Litharge, bbls. and 1/4 bbls..... 5 1/2 @ 5 1/2
 Ocher, Rochelle..... 1.35 @ 1 1/2
 Ocher, French Washed..... 1 1/2 @ 2 1/2
 Ocher, German Washed..... 1 1/2 @ 2 1/2
 Ocher, American..... 1 1/2 @ 2 1/2
 Orange Mineral, English..... 7 1/2 @ 8
 Orange Mineral, French..... 10 @ 10 1/2
 Orange Mineral, German..... 7 1/2 @ 8
 Orange Mineral, American..... 7 1/2 @ 8
 Red, Indian, English..... 5 @ 5
 Red, Indian, American..... 2 @ 5
 Red, Turkey..... 9 @ 14
 Red, Tuscan..... 7 @ 10
 Red, Venetian, American..... 1 @ 1.70 @ 1.00
 Red, Venetian, English..... 1 @ 1.35 @ 1.35

Sienna, Italian, Burnt and

Sienna, Italian, Burnt and..... 1 1/2 @ 3 1/2
 Sienna, Ital., Raw, Powd..... 4 1/2 @ 5 1/2
 Sienna, Ital., Raw, Lump..... 1 1/2 @ 3 1/2
 Sienna, American, Raw..... 1 1/2 @ 3 1/2
 Sienna, American, Burnt and..... 1 1/2 @ 3 1/2
 Powdered..... 1 1/2 @ 3 1/2
 Talc, French..... 1 1/2 @ 1 1/2
 Talc, American..... 1 @ 1 1/2
 Terra Alba, Fr'ch. 100 lb..... 85 @ 75
 Terra Alba, English..... 85 @ 75
 Terra Alba, American No. 1..... 65 @ 75
 Terra Alba, American No. 2..... 45 @ 50
 Umbro, Turkey, Burnt and..... 2 1/2 @ 3 1/2
 Powdered..... 2 1/2 @ 3 1/2
 Umbro, Turkey, Raw and..... 2 1/2 @ 3 1/2
 Powdered..... 2 1/2 @ 3 1/2
 Umbro, Turkey, P.W. Lump..... 2 1/2 @ 3 1/2
 Umbro, Turkey, Bnt. Amer..... 1 1/2 @ 1 1/2
 Yellow, Chrome..... 10 @ 25
 Vermilion, American Lead..... 11 @ 12
 Vermilion, Quicksilver, bulk..... 43 @
 Vermilion, Quicksilver, bags..... 44 @
 Vermilion, Quicksilver sm't p'kgs..... 52 @ 60
 Vermilion, English Import..... 65 @ 60
 Vermilion, Italian, Eng..... 8 @ 30
 Vermilion, Trieste..... 90 @ 95
 Vermilion, Chinese..... 85 @ 1.00
 Whiting Compound, 100 lb..... 40 @ 45
 Whiting Gliders..... 50 @ 55
 Zinc, American, dry..... 3 1/2 @ 4 1/2
 Zinc, French, Red Seal..... 7 @ 7 1/2

Zinc, French, Green Seal.....

Zinc, French, Green Seal..... 8 1/2 @ 9
 Zinc, French, V. M. X..... 6 @ 7
 Zinc, Antwerp, Red Seal..... 6 @ 6 1/2
 Zinc, Antwerp, Green Seal..... 6 1/2 @ 7 1/2
 Zinc, German, L. Z. O..... 5 @ 5 1/2
 Zinc, V. M. in Poppy Oil, Seal, lots of 1 ton and over..... 10 1/2 @
 lots less than one ton..... 11 @
 Zinc, V. M. in Poppy Oil, Red Seal..... 10 1/2 @
 lots of 1 ton and over..... 10 1/2 @
 lots of less than 1 ton..... 10 1/2 @
 Discounts—French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1 1/2; 25 bbls., 2%; 50 bbls., 4%. No discount allowed on less than bbl. lots.

Colors in Oil—

Black, Drop, Frankfort..... 25 @ 30
 Black, Drop, English..... 12 @ 15
 Black, Drop, Domestic..... 7 @ 10
 Black, Lampblack, Best..... 20 @ 35
 Black, Lampblack, Common..... 7 @ 13
 Black, Ivory..... 8 @ 15
 Blue, Chinese..... 35 @ 40
 Blue, Prussian..... 20 @ 45
 Blue, Ultramarine..... 12 @ 18
 Brown, Vandyke..... 7 @ 12
 Green, Chrome..... 8 @ 13
 Green, Paris..... 16 @ 18 1/2
 Sienna, Raw..... 7 @ 14
 Sienna, Burnt..... 7 @ 14
 Umber, Raw..... 7 @ 10
 Umber, Burnt..... 7 @ 10

Putty—

In barrels and 1/4 bbls..... .013¢ @ .013¢
 In tubs..... .013¢ @ .013¢
 In tin cans..... .013¢ @ .013¢
 In bladders..... .013¢ @ .013¢

Spirits Turpentine—

In regular bbls..... 30¢ @
 In machine bbls..... 31¢ @ 31 1/2¢

Glue—

Low Grade..... 7 @ 9
 Cabinet..... 11 @ 14
 Medium White..... 12 @ 14
 Extra White..... 16 @ 20
 French..... 10 @ 22
 English..... 10 @ 15
 Irish..... 10 @ 12 1/2

THE IRON AGE.

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